A FLORISTIC AND ETHNOBOTANICAL ACCOUNT OF THE JOSEPHSTAAL FOREST MANAGEMENT AGREEMENT AREA, PAPUA NEW GUINEA

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ABSTRACT

Botanical survey results are presented from the Josephstaal Forest Management Agreement Area, a venue currently under planning evaluation for several development contingencies. Four new species are formally described: *Aglaia saxonii* (Meliaceae), *Barringtonia josephstaalensis* (Barringtoniaceae), *Calycosia mamosei* (Rubiaceae), and *Psychotria mayana* (Rubiaceae). A substantial number of distributional records and discoveries of rare taxa are reported. Compilations of Maian plant names and uses are also included.

The findings suggest that Josephstaal habitats are refugia for restricted endemics which have been eliminated from other parts of their historical range. Judicious planning is necessary when evaluating the land-use options for this area. Populations of several susceptible taxa may constitute the only existing colonies.

KEY WORDS: *Aglaia*, *Barringtonia*, botanical survey, endangered species, *Calycosia*, Josephstaal, Papuasia, *Psychotria*

ABSTRACT

現在、その土地利用及び開発が検討中であるジョセフスタール森林管理協定地区における植物調査の結果を報告する。調査において発見された４つの新種については、その描写が本文中に行われている。それらの新種は *Aglaia saxonii* (センダン科)、*Barringtonia josephstaalensis* (サガリバナ科)、*Calycosia mamosei* (アカネ科)、*Psychotria mayana* (アカネ科)である。調査結果には現地名や利用方法などの民族植物学的見地からの情報も含まれている。

ジョセフスタール地域は、かつての分布地域から消え去ってしまった幾つかの固有種のレフェジアであることが調査結果から推測される。この地域の土地利用計画の作成には慎重な検討を重ねる必要がある。ジョセフスタール地域が幾つかの影響を受けやすい植物群の、現存する最後のコロニーである可能性があるからである。

INTRODUCTION

The Josephstaal Forest Management Agreement Area (JFMAA) is an intended venue for logging operations based on the reduced-impact formats known as 'ecoforestry.' Prior

to the project's implementation, botanical surveys were considered necessary to establish biological baselines for the concessional areas. An ecological reconnaissance of the JFMAA (Fig. 1) was thus conducted by the Nature Conservancy (TNC) between September 9 and 17, 1998, followed by a general floristic evaluation during the period from July 26 to August 25, 1999. The following paper is a synopsis of the initial findings from these investigations.

SITE SUMMARY

The survey tract is located for the most part, within territory covered by the Annanberg topographic sheet, but also overlaps the adjacent Adelbert, Manam, and Nubia map units (cf. Australian Survey Corps 1973, 1974a, 1974b, 1974c: 7888, 7889, 7988, 7989). This general area is part of the Mugumat-Yakiba Census Division of Bogia Subdistrict; and includes the principal villages of Dumadum, Moresada, Mugumat, Roumirap, Wadaginum, and Wagadab (Dept. of District Administration 1968: 88–89).

The 1999 survey was based at three camps established sequentially at map coordinates (GPS) 9504560 N × 281407 E; 9497596 N × 280100 E; and 9498679 N × 284829 E; at elevations from ca. 50 to 160 m. There was mature growth foothill forest at Camp 1, and alluvial terrace communities at Camps 2 and 3. The latter bases provided convenient access to both riverine and foothill vegetation.

All investigated sites are within northern Papua New Guinea's (PNG) lowland forest life zone, where mean annual rainfall is 2,000 to 3,500 mm. The wettest months generally occur during January to April, when prevailing winds are northwesterly, and the driest in May to August when southeasterly trades become effective (McAlpine et al. 1983: 65). Even during the relative dry season, average monthly rainfalls are still generally around 200 mm, so the vegetation is only infrequently subjected to soil moisture deficiencies under normal conditions (ibid: 140). Most climatic classifications would categorize the project sites as tropical everwet, perhumid, or some other equivalent descriptor emphasizing the overall absence of water deficits.

The survey sites are typical for a PNG wilderness area, in that information-gathering services are sporadic or altogether lacking. Meteorological summaries are necessarily developed by extrapolation from stations which may not be representative. Although the nearest station with published tables (Madang A/S) shows high annual rainfalls with moderate seasonality, severe droughts have been known to occur in this general region. Episodes of widespread fires and forest destruction have been documented (Johns 1986: 349–351, 359).

From a geological perspective, the Josephstaal Physiographic Province represents the crustal remnants of an island arc which collided with the Australian plate about 10 m.y. BP (Pigram & Davies 1987). Parent substrates are generally derived from basalt volcanics of this now-disappeared arc (Jaques & Robinson 1975: 12). Severe earthquakes occur frequently within the area covered by the TNC project, so plant speciation is probably being encouraged by landslide-induced isolation of populations, particularly at the higher elevations (cf. Balgooy et al. 1996: 201–02).

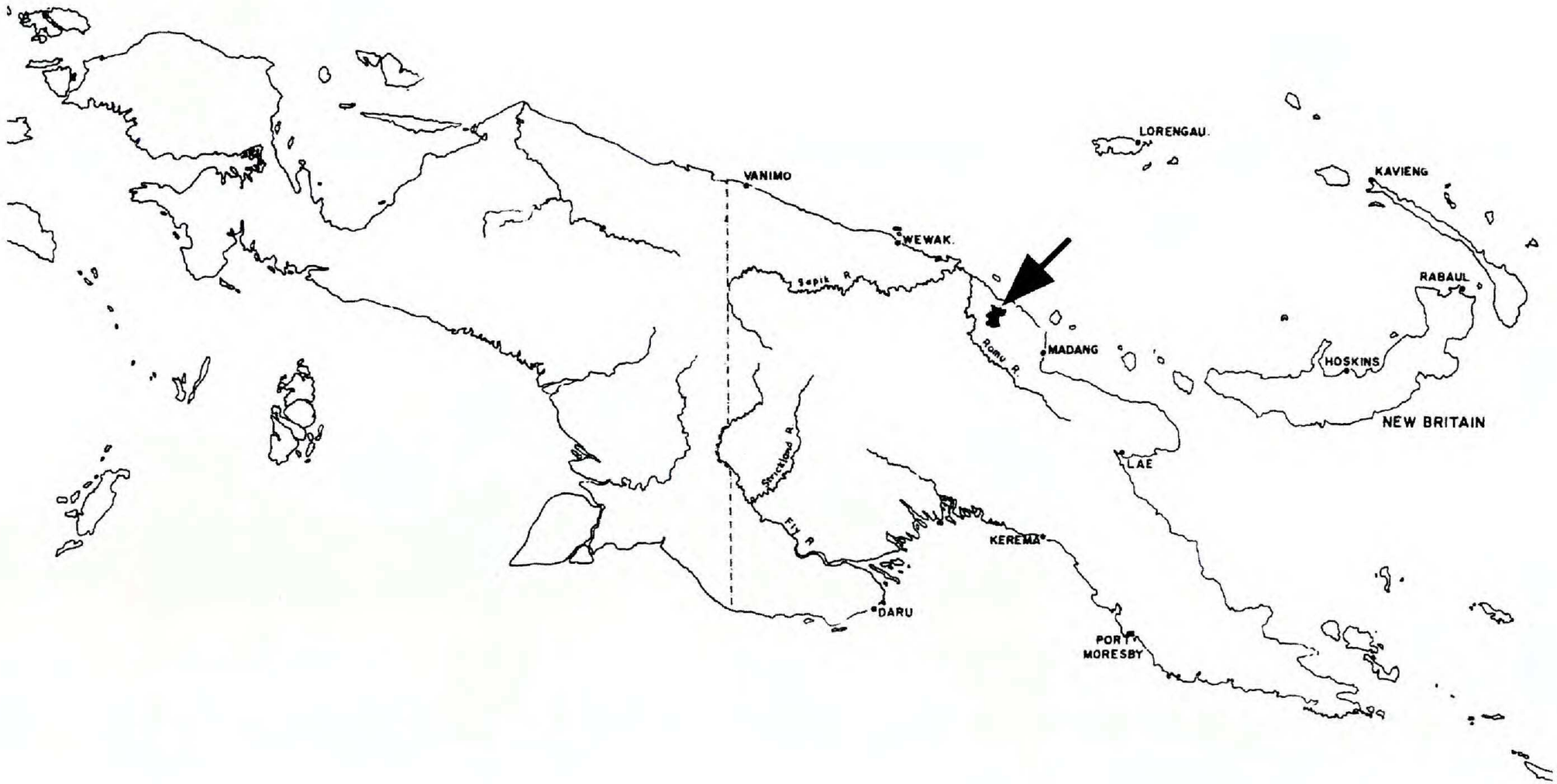

FIG. 1. Island of New Guinea. Arrow: Josephstaal Forest Management Agreement Area (JFMAA).

Soils of the Bogia Subdistrict (including Josephstaal) are dystropepts and eutropepts, a group characteristic of lowland habitats and comprising the most common soil type in Papua New Guinea (Bleeker 1983: 98–9). There are no ultramafic or other specialized edaphic environments within the surveyed tract.

HISTORY OF BOTANICAL ACTIVITY AT JOSEPHSTAAL

Botanical work on the Josephstaal flora has been sporadic and opportunistic in nature, with involvement by a limited number of specialist collectors. Prior to the TNC surveys, the largest collection was the set made by K.J. White during the period September 1 to 15, 1958. White obtained a total of 103 numbers under the NGF (New Guinea Force) series, from which three collections were later designated as type specimens (*Endiandra magnilimba* Kosterm., *Horsfieldia basifissa* de Wilde, and *Syzygium madangense* Hartley & Perry).

Contemporary efforts at identification of historical localities have been generally complicated by the oftentimes limited data provided by earlier botanists in Papuasia. The K.J. White numbers are thus somewhat uncharacteristic for the period, since for all sheets the point of reference is clearly specified as 'Josephstaal,' at 'L. 4 45 S and Lat. 145 00 E.' The elevation is consistently given as '250 feet' and repeatedly indicates riverine or alluvial habitats. Pondoma, Naikum, and Tumbundi villages are mentioned on some labels (e.g., *Thespesia fissicalyx* in *NGF 10297*; *Maniltoa rosea* in *NGF 10226*; and *Cryptocarya weinlandii* in *NGF 10306*, respectively). From the information provided on White's gatherings, there are consistent indications he was working in the lower basin connected to the Guam River. For at least part of the time, White was probably accompanied by R.G. Robbins, as suggested by an independent number (*Endiandra squarrosa* in *Robbins 1625*), which is cross-referenced against *White's NGF 10252*, and which refers to the latter as a duplicate. Robbins's locality is specified as 'Josephstaal, lower Ramu-Atitau area, Madang District.' *Robbins 1667* (*Barringtonia apiculata*) adds further: 'near Josephstaal 400 ft.'

White's specimens have been intensively studied over the years, and the determinations assigned to them by specialists indicate the sort of taxa that would be expected from the JFMAA on general distributional and ecological grounds. The K.J. White collections have been incorporated into the survey documentation (Appendix 1) because the species involved are present within and immediately around TNC's project area.

During the herbarium work phase, specimens collected by R. Pullen were also examined from the vicinity of Josephstaal. A typical label from *Pullen 1188* (*Alocasia brancifolia*), gives the collection site as 1/4 mi south of Josephstaal airstrip. Although the Pullen numbers are from comparable lowland habitats, they were collected slightly outside the project area and are mentioned only incidentally in the following summaries. In any event, comparatively few Pullen specimens are present at the PNG National Herbarium (LAE); the NGF sheets comprise a decidedly larger set.

Other botanists with collections from the Josephstaal tract include J. Womersley, B.S. Parris, and J.P. Croxall. The Parris and Croxall numbers are specialist pteridological collections made along the unimproved road to Josephstaal in 1980. Most of their fern records have been replicated by the surveys' results. Womersley's numbers from the

Wanuma area (*NGF 48651-48678* from 600 to 950 m elevation in 1974) are substantially removed from the project site but are notable for being among the few sets taken from the Adelbert summit range.

By far the most comprehensive specimen series for Josephstaal are the collections from the TNC-sponsored botanical surveys of 1998 and 1999. A total of 973 numbers were added to the national herbarium from these efforts; 62 from the 1998 ecological reconnaissance and 911 from the recently-concluded expedition. The combined tally increases the plant documentation for Josephstaal by nearly an order of magnitude over what was previously available. Due to the surveys' exclusive focus on the elevational interval below 400 m, the herbarium coverage for the JFMAA is now among the best for any lowland wilderness in Papuasia.

METHODS

The 1999 survey consisted of general exploration and collecting around three expedition camps, primarily using established footpaths or following the secondary channels comprising the Guam drainage. The botanical collections were conducted by an integrated team consisting of M. Gorrez, W. Takeuchi, A. Towati, and J. Wiakabu. During the selection of specimens, deliberate attention was directed to groups usually spurned by botanists because of their inherent repellent qualities or other difficulties associated with their processing. Palms, aroids, stinging nettles, grasses, alien weeds, etc. were secured when suitable specimens were encountered, in contrast to the general reluctance for collecting such plants. Multiple gatherings of certain taxa were also made, when their significance was already apparent in the field, in order to allow evaluation of population variation. Survey protocols were consistent with the principal objective of developing a representative floristic profile of the project area within the allocated one-month period.

Ethnobotanical polling was conducted separately by survey biologists J. Wiakabu and M. Gorrez, through group interviews with village elders. Names and uses of specific plants were recorded, with special attention paid to culturally sensitive taxa. All vouchers were field-pressed in 70% surgical alcohol and subsequently transported to the PNG Forest Research Institute (PNGFRI) for processing and determination. Materials for exsiccatae were often accompanied by bottled, carpological, and xylarium accessory collections when these were necessary for identification.

The Lae National Herbarium (LAE) is the repository for first sets from the vouchers. Distribution of duplicate sets will follow LAE's exchange sequence, on which Kew (K), Rijksherbarium (L), and Harvard (A), are the principal receiving institutions. Residual sets will be allocated in conformity to preexisting agreements or in compliance with future TNC requirements. Whenever possible, specimens were named using the current taxonomic revisions, or from a combination of authoritatively annotated sheets and original descriptions. Some collections could only be assigned with doubt to a species group or section. In a number of cases, submissions were made to international specialists. Taxa encountered only in sterile condition or otherwise not collectable, were enumerated as a sight record when the plant was known with certainty to the writer.

GENERAL DESCRIPTION OF THE VEGETATION

Two principal forest-structural divisions (alluvial forest on riverine terraces, and foothill forest on well-drained slopes), were discerned during the initial 1998 reconnaissance. The opportunity for detailed examination afforded by the 1999 survey, subsequently showed that many community types are included under these two formations.

The margins of large streambeds in the Josephstaal area are marked by a distinctive riverine facies dominated by lianes, heliophytes, and rheophytic taxa. This edge community is generally absent from smaller streams with closed canopies. In swampy situations, the interior alluvial stands are typically species depauperate, *Metroxylon*-dominant, and with poor vertical development. On better-drained alluvia the forest becomes more floristically and structurally diverse, eventually forming a varied community with interlocking canopy layers and clear understories. There are intermediate communities apparently linked to diminishing rhizosphere stagnation. However in places with a linear series of staggered terraces, such intermediates are interpretable as a successional sequence resulting from progressive changes in streamcourse (Saxon, pers. comm.). Superimposed over the matrix of variation are smaller units in various stages of regrowth, which have been caused by large treefalls, attritional senescence, catastrophic storms, etc. While the alluvial forest is for the most part assigned to structural code 'Fri' in Hammermaster and Saunders (1995a), there is clearly a continuum of communities within this category.

From examination of understory and subcanopy taxa, the forest on hillsides and ridgelines was initially regarded as homogeneous. Herbs and subarborescent plants appear to range through the foothill habitat without obvious distributional separations. However Weterings (pers. comm.) noted pronounced contrasts in canopy compositions between ridgelines and lower slopes during the independently-conducted timber assessment. His observation is supported by the known autecological patterns of arborescent genera, as for example the preference of dipterocarps for ridgecrest environments (Johns 1977; Paijmans 1976). Like the alluvial zone, there is very probably a fragmentation of the foothill formation into subtypes, though the differentiation may be primarily reflected in overstory structure, while with the riverine communities, it is discernable in the near-ground compositions. Characterization of the hill forest communities will require surveys of greater intensity than the one just concluded, employing a combination of transects and random collecting. This suggestion is supported by recent findings from similar rapid-assessment surveys in other parts of Papuasia (e.g., Mack 1998).

The Josephstaal foothill communities fall primarily under forest structural code 'Hm' and are known to intergrade with alluvial formations (Hammermaster & Saunders 1995a: 11). The 'Hm' category is the major merchantable forest unit in the existing JFMAA (Hammermaster & Saunders 1995b: SB 55-1 Bogia overlay). On the earlier classifications of Paijmans (1975) and Saunders (1993), the project sites are placed respectively under structural codes 'FHm' and 'Hm.' Due to similarities in terminology employed by each author, the different typing sytems yield comparable floristic descriptions. The Josephstaal tract is essentially a typical medium-crowned forest from low elevation environments.

However the wide variation within this forest type obscures the commercial valuations assignable to specific subunits.

ETHNOBOTANICAL COMPILATIONS

The plant names provided by respondents are derived from the traditional Maia (Maya) language spoken by villagers within the project area. Clan elders Francis Muoimuado and Josef Sigagopa were principal sources for the information summarized in Appendices 2 and 3. Ethnobotanical questioning usually occurred in the presence of a village audience, with the clan elders serving as a central authority or facilitator. A consensus was thus established. The group interviews provided a means for identifying the assets requiring protection from ecoforestry operations. Because the survey objectives were primarily taxonomic, ethnobotanical inquiry was subordinated to the main itinerary, and rapid appraisal procedures were adopted in place of rigorously analytic methods. All aspects of the ethnobotanical inquiry will require critical evaluation against established benchmark studies, when the present investigations are extended into other parts of the Adelbert Range.

Despite these limitations, certain patterns are evident from the compilations. Unlike the nomenclature of formal science, with its simple and rigorously applied binomial protocol, the botanical classification employed by Josephstaal villagers is multifarious and idiosyncratic. Most Maian plant names appear to be descriptively based, and if translated will probably be seen as alluding to particular features of a plant, in the manner of pre-Linnean botany. Although it is obviously not a two-element nomenclature, Maian plant names can occasionally exhibit functional resemblances to a binomial system. In such instances 'generic' units are usually indicated with a common designator at the front of a complete name, the 'species' then being specified with a qualifying phrase or word following the generic mark. Examples include: 'warubu-nganam,' 'warubu-sopasop,' and 'warubu-taleba;' corresponding respectively to *Glochidion* sp. aff. *chondrocarpum*, *Dysoxylum brassii*, and *Dysoxylum pettigrewianum*. Various taxa in *Strobilanthes* (*Hemigraphis*) are similarly designated as variants of 'sagag;' i.e. 'sagag-gosmun,' 'sagag-u-goga-umun,' and 'sagag-ugosum.' The conventions are comparable to findings reported by Petir et al. (1998), from a study conducted in another part of the Adelbert Range.

In most cases, similarities in gross appearance are apparently the major criteria for application of names. This is demonstrated by the woody shrubs *Lepisanthes senegalensis* (Sapindaceae), *Ixora* sp. sect. *Hypsophyllum* (Rubiaceae), and *Phaleria coccinea* (Thymelaeaceae), which are all identified as 'kibi-kibale' despite obvious contrasts in their fertile aspect. The gross equivalence in habit and leaf form is seemingly sufficient for combining these taxa under one concept. The Maian 'maberu' is similarly applied to *Cleistanthus* sp. aff. *papuanus*, *Erythrospermum candidum*, and *Rhyticaryum longifolium*, showing again that names are assigned on the basis of superficial aspect rather than by awareness of specific structural distinctions. The rationale may be less clear however, in

cases where the members of a nomenclatural group have little in common even in regards to general form. Other than the fact that they all represent pinnately constructed ferns, *Microsorum membranifolium*, *Asplenium* cf. *affine*, *Lindsaea tenuifolia*, *Bolbitis quoyana*, and *Pleocnemia macrodonta*, are obviously different plants, yet are relegated at least in part, to the one name 'lasa-lasa.' The differences among the referents of 'dagol-dagol' are even more striking; including such diverse taxa as *Asplenium* cf. *amboinense*, *Lindsaea obtusa*, and *Liparis condylobulbon*. From the fact that these plants are so obviously different, the Maian classification surely is not founded on judgments of taxonomic equivalence in the Western sense, but must be proceeding from some other logic; possibly involving a principle of utility.

In floristically rich environments such as are generally present in Papuasia, only a fraction of the botanical diversity will enter the cultural consciousness. Many plants recorded by the recent surveys do not have a local (tokples) name; or at least the respondents were unable to provide one. Of those taxa which find tokples assignment, a very small percentage are actually of ethnographic significance (Appendix 3). When a plant is of high usage-value, it is accorded a unique designation and the phonetic root for that name is often not transferred to other plants. In general the converse relationship is also true; Maian names with heterogeneous group membership are generally composed of 'useless' elements (e.g., 'lasa-lasa') for which there are no clearly defined applications. Where plants of diverse appearance are placed together under common designation, the species involved are not of particular value, so from the traditional-cultural perspective there may be no imperative for distinguishing them anyway. Maian botany is arguably grounded on practical principles. As an information retrieval system, it expends efforts toward the identification of resources with specific cultural application, and tends to consign everything else to loosely defined sets. In cultures without a written tradition, such economy is probably necessary to restrict the amount of ethnological data to limits amenable to oral transmission and retention. While the Maian plant classification is typically artificial and inappropriate as an adjunct to formal floristic research, it appears to represent a system closely adapted to local interests and requirements.

The fact that very different species are often placed under the same Maian name, will complicate TNC's intentions to train forest stewards from traditional landowner groups. Especially in speciose families such as Sapindaceae and Annonaceae, where identifications are largely dependent on an understanding of reproductive structures, Maian botany will be unable to contend with many discriminations even at generic level. This discourages use of the Maian system as a basis for cross-cultural instruction, and necessitates introduction of Western concepts into the training process.

The frequent lack of tokples specificity also argues against reliance on villagers for plant identifications in floristic enumerations. Such dependence would result in information loss and underestimates of diversity. There is no effective substitute for employment of high-resolution taxonomic concepts during botanical inventories; the commentary by Kartawinata (1990: 125) regarding the unreliability of local names, is especially relevant.

DESCRIPTIONS OF NEW SPECIES

BARRINGTONIACEAE

Barringtonia josephstaalensis Takeuchi, sp. nov. (**Fig. 2**). TYPE: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, Guam River, alluvial forest on riverine terraces, between GPS coordinates 9497596 N, 280100 E, and 9496.322 N, 274.601 E, 80 m, 9 Aug 1999 (fl), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,796* (HOLOTYPE: LAE; ISOTYPES: A, BRIT, K).

Inter species *Barringtoniae* singularis ob folia lineari-loriformia, 47–84 cm longa, 16–38 mm lata, apice acutata, basi sensim angustata.

Understory shrub; monoaxial or branched, to 2 m tall, entirely glabrous. *Branchlets* terete, apically and discontinuously fistulose, otherwise pithy, periderm crustaceous, exfoliating in flakes. *Leaves* spirally congested in terminal rosettes, blades herbaceous or fleshy, adaxially medium green, abaxially light green, obliquely ascending in the lower half, drooping in the upper half, linear or ligulate, 47–84 cm × 16–38 mm (200–310 × longer than broad), attenuate at both ends, margins serrulate, the serrulations with an antrorse process inserted on the leading edge and following the forward margin; venation pinnate, secondaries 50–65 pairs, 8–12 mm apart, arcuate, ±brochidodromous but anastomosing freely beyond the commissural loops, tertiary nervation conspicuously and bifacially areolate, prominulous, midribs prominent on both surfaces; petioles slender, adaxially plane, rounded beneath, proximally swollen, to ca. 9 cm length but obscurely distinguished from the lamina and occasionally with the decurrent leaf base nearly reaching the stem; stipules linear-acuminate, typically 9–18 × 1.5–2.0 mm, falling early, costate, the rib excurrently prolonged to a filiform cauda. *Inflorescence* cauligerous or ramigerous, cernuous, racemose, at times corymbiform, pauciflorous from a rachis 2.0–3.5 cm long; peduncular bracts stipuliform, to 14 × 1 mm, involute; bracteoles minute, linear, not or barely exceeding 1 mm length; pedicels 7–11 mm, articulated at the base. *Flowers* (measurements from rehydrated specimen) globose in bud, initially brownish-purple, later green and red-suffused; calyx tube turbinate, not angulate nor alate, the limb membranaceous, completely connate, at first enclosing the other parts, mucronulate or infrequently with an apical orifice, rupturing at anthesis into 2(–3) subequal lobes, these approximately plinerved, parting nearly to the base, suborbicular, ca. 14 × 13 mm; petals 4, narrowly obovate to oblanceolate, to 24 mm long for buds nearing anthesis, concave, venose; androecium multiseriate, staminal column 13 × 4–5 mm, stamens inserted on the outer side, the lowermost stamens arising 8–9 mm from the base, anantherous, ca. 35 mm long, antheriferous stamens 15–20 mm long, crowded above the lower staminodial ones, the tube rim crowned by a fringing whorl of staminodes ca. 2–3 mm long; ovary (3–)4 celled, ovules several per locule, apically inserted, pendulous, irregularly obovoid; style capillary, 28–32 mm long, exceeding the petals but remaining enfolded until loss of the corolla, thereafter persistent, basally dilated into a conical stylopodium 3 × 3 mm; stigma weakly capitate. *Fruits* unknown.

Distribution and ecology.—Known thus far only from the Josephstaal tract. *Barringtonia josephstaalensis* is a facultative helophyte from seasonally flooded riverine

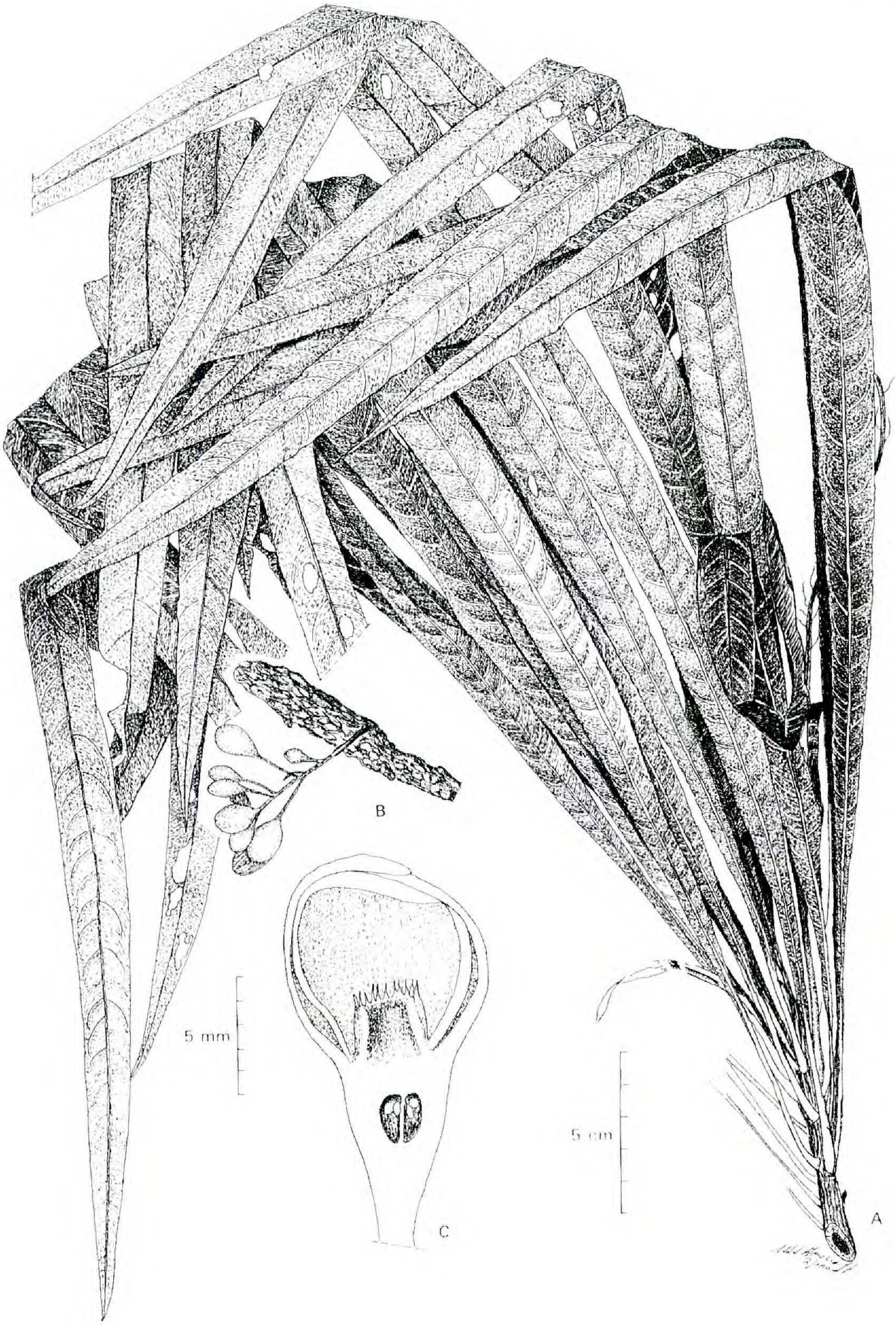

FIG. 2. *Barringtonia josephstaalensis* Takeuchi, sp. nov. A. Vegetative habit. B. Raceme attached to stem section. C. Flower bud; longitudinal and schematicized view across the adaxial surface of the staminal cylinder. Fertile stamens, outer staminodes, and style removed for clarity. Scale bars: A–B, 5 cm; C, 5 mm. Drawn from the type by N.H.S. Howcroft.

flats and the lower slopes of foothill forest. It is apparently not common, at least within the area covered by recent assessment.

Etymology.—The new binomial commemorates the Josephstaal type locality.

PARATYPES: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, Guam River near expedition Camp 2, lower slopes of natural-growth foothill forest, near GPS coordinates 9497596 N, 280100 E, 50–100 m, 13 Aug 1999 (fl), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,973* (LAE, NY).

The connate calyces clearly indicate membership in section *Barringtonia*, within which the new species is easily distinguished by its linear leaves. However it is not as certain whether *B. josephstaalensis* is naturally branched; the type collection was made along a forest track so the branches may be the result of bayonnet reiteration.

The monadelphous androecium is marked by the unusual presence of both an outer and inner staminodial whorl. Although the inner series is highly reduced, the outermost structures are conspicuously longer than the fertile stamens. In Payens's (1967: 164) revision, the staminodes of all species are always clearly vestigial and only disposed in adaxial whorls. The existence of outer-marginal staminodes and their prolongation in *B. josephstaalensis*, are thus highly unusual elements. Together with the linear leaves, the character combination for this species is unprecedented. Although the plant's appearance is very deviant, the racemiform inflorescence and apical insertion of ovules are otherwise consistent with *Barringtonia*.

The new species is known by the Maian name 'kun-joob,' and its bark is reportedly used to poison fish in the manner of *Derris* (Fabaceae). Ethnobotanical application of this sort had been reported previously for the sympatric *Barringtonia calyptrocalyx* var. *mollis* (Payens 1967: 212). The latter taxon is identified by the separate Maian name 'gaira-malapta.'

Barringtonia josephstaalensis will key to fork 23 in Payens (1967: 180) before reaching an impasse. It can be accommodated by interposing the following couplet between the existing couplets 22 and 23:

Blades 200–310 × longer than broad; lamina ligulate _____ **Barringtonia josephstaalensis** Takeuchi

Blades 1.75–31 × longer than broad; lamina various but not ligulate _____ to couplet 23

MELIACEAE

Aglaia saxonii Takeuchi, sp. nov. (**Fig. 3**). TYPE: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, along track to Morasapa W of expedition Camp 1 ('Kumamdeber'), mature growth foothill forest, between GPS coordinates 9504560 N, 281407 E, and 950285 N, 28030 E, ca. 160 m, 1 Aug 1999 (fr, carpological), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,712* (HOLOTYPE: LAE; ISOTYPES: A, BRIT, K, L).

Species haec *Aglaia subsessili* Pannell affinis sed fructu non longitudinaliter porcatu, loculis 2, denique semine in quoque loculo solitario.

Subcanopy tree to 15 m height. *Branchlets* elactiferous, moderately robust, 6–8 mm diam., the periderm weakly sulcate or irregularly cracking in brittle flakes, at first with an orange-brown indument of dimorphically stellate hairs, the larger hairs appressed or obliquely

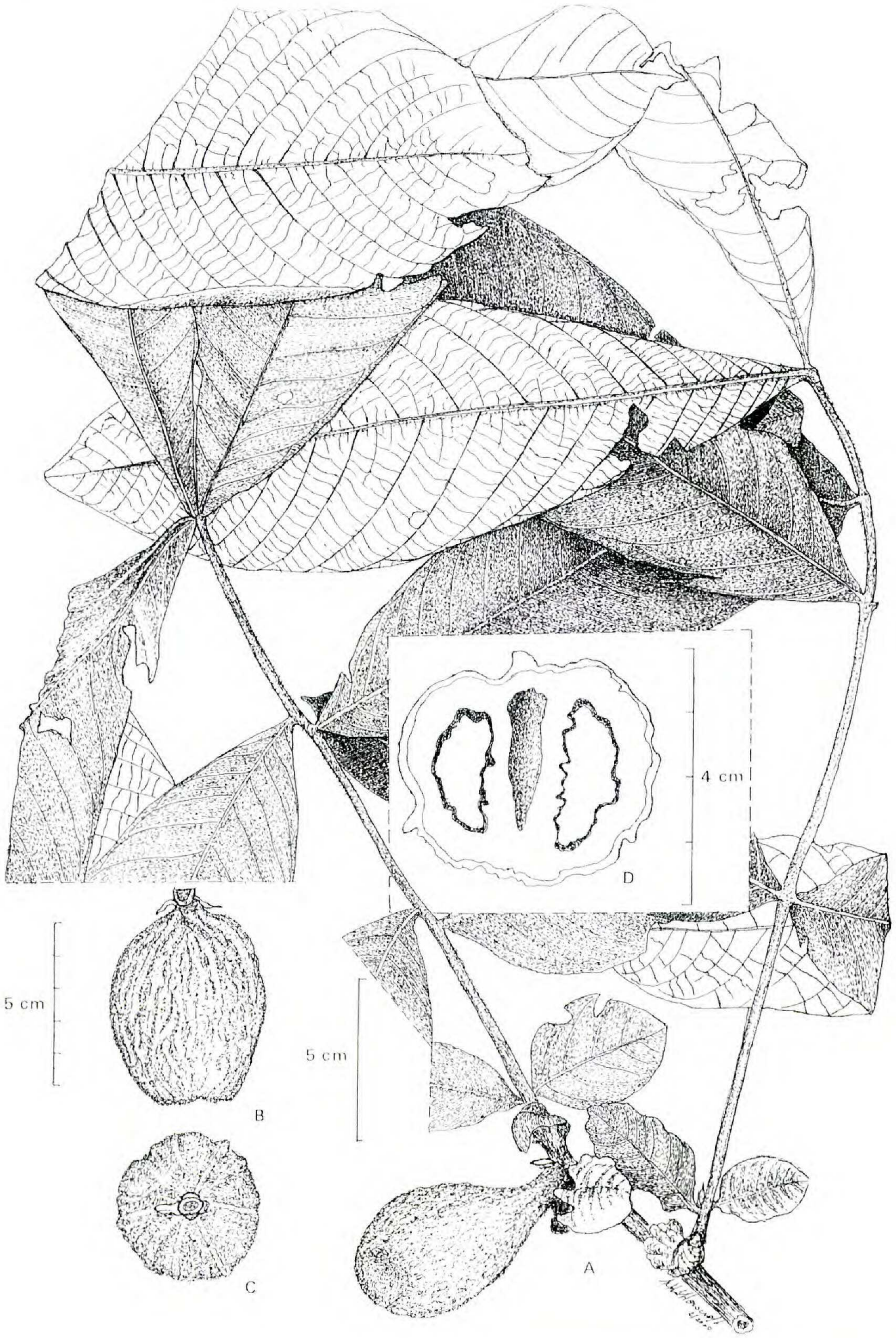

FIG. 3. *Aglaia saxonii* Takeuchi, sp. nov. A. Fruiting branchlet. B. Fruit, side view. C. Fruit, proximal polar view. D. Fruit, cross-section showing two seeds and a central lacuna. Scale bars: A, 5 cm; B–C, 5 cm; D, 4 cm. Drawn from the type by N.H.S. Howcroft.

patent, sometimes crisped, hyaline, arms 10 or more, acicular-setiform, ca. 1 mm long; minor hairs compact, rays coarse, congested, 0.1–0.2 mm long; stem surfaces early glabrescent and then entirely glabrous below the leaf spray. *Leaves* imparipinnate, 3–5 jugate, spiral, terminally congested, sessile, 41–57 × 42–70 cm at maturity, rugose, herbaceous or papery, adaxially opaque dark green, abaxially medium to light green, upper surfaces with hairs restricted to a costal channel and resembling the large hairs on rachis and branchlets, undersurfaces pustulate, indument lax, the abaxial hairs usually 0.5–1.0 mm diam., following veins, intermixing with smaller stelliform scales especially on the midrib, dark glandular pits bifacially scattered; leaf rachis with indumentum like the branchlets; leaflets opposite, decrescent, heteromorphous, the terminal one oblanceolate, basipetally elliptic-oblong then ovate-orbicular, the proximal pair auriculate and amplexicaulous, auricles ca. 1.5 cm diam., subapical leaflets often the largest, oblanceolate, 19.5–33 × 6.0–11.5 cm, shortly acuminate at the apex, basally cuneate; venation pinnate, inconsistently camptodromous or (brochidodromous), secondaries in 16–25 pairs on major leaflets, 5–7 pairs on small leaflets, diverging 45–75° from the midrib then gradually arcuate toward the margin, partial intersecondary veins frequently present, tertiary nerves scalariform or not, reticulum coarsely areolate, veins impressed on upper surfaces, the midrib immersed, beneath with all veins raised; petiolule absent or the leaflets subsessile and costae swollen at the insertion to rachis. *Inflorescence* unknown. *Infructescence* axillary, emerging from foliate nodes, rachis 6–11 × 5 mm, with hairs like the branchlets, bracteate. *Fruits* indehiscent, solitary, rarely two together, obovoid or globose-oblongoid, to 66 × 48 mm; style semi-persistent, stellately hairy at the base, glabrous above; exocarp completely obscured by dense tomentum, the vesture initially orange-brown, later reddish-brown, mealy to the naked eye, only with magnification discernable as thickened stellate tufts; developing fruits stipitate, the sepals foliaceous, disintegrating, adhering to the exocarp, covered by appressed scales with pale setiform rays resembling cystoliths; pericarp woody, indurate, odorous, 6–7 mm thick, locules 2, each cell monospermous; seed surface distinctly sinuate in transection.

Distribution and ecology.—*Aglaia saxonii* is known only from the subcanopy of advanced growth forest at Josephstaal, where it is locally common on foothill slopes. All populations were seen in submature or ripe fruit, suggesting that the species may exhibit big bang flowering.

The plant's stature and distinctive features make it a conspicuous component of the Josephstaal vegetation. Its susceptibility to proposed logging operations is unknown, but as a fairly tall tree species, *A. saxonii* would probably be adversely affected by selective forest removal.

Etymology.—It is a pleasure to name the new species after Dr. Earl Saxon, the Asia-Pacific regional ecologist for the Nature Conservancy (TNC) and the project's senior scientific investigator.

PARATYPES: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, along track to Morasapa W of expedition Camp 1 ('Kumamdeber'), mature growth foothill forest, near GPS coordinates 9504560 N, 281407 E, 160 m, 29 Jul 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,462* (CANB, LAE);

Josephstaal FMA area, between expedition Camp 1 ('Kumamdeber') at GPS coordinates 9504560 N, 281407 E and Manag Wara at GPS coordinates 950629 N, 28052 E, ca. 160 m, 5 Aug 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,765* (K, LAE, NY).

The sessile leaves of *A. saxonii* immediately distinguish it from all the Papuasian congeners. The thickly woody pericarp is also atypical. As noted by Pannell (1992: 11) *Aglaia* species generally have brittle to coriaceous pericarps, but the fruits of *A. saxonii* are obviously lignified and required considerable effort to section with a hacksaw.

The novelty's affinity is to *A. subsessilis* of Borneo, but the latter clearly differs in its larger infructescences, thin pericarp, and unilocular-monospermous fruits.

Aglaia saxonii will key to fork 136 in Pannell (1992: 56–57). It can then be integrated to the existing treatment by inserting the following couplet in place of the present couplet 136 (ibid):

Leaves sessile; leaflets sessile or pulvinate _____ **Aglaia saxonii** Takeuchi
Leaves petiolate; leaflets clearly petiolulate _____ to the existing fork 136

RUBIACEAE

Calycosia mamosei Takeuchi, sp. nov. (**Fig. 4**). TYPE: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, streambed flowing to SW of expedition Camp 1 ('Kumamdeber'), mature growth foothill forest with occasional landslip communities, near GPS coordinates 9504560 N, 281407 E, 160 m, 28 Jul 1999 (fl, fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,404* (HOLOTYPE: LAE; ISOTYPES: A, BRIT, CANB, K, L, NY).

Species haec ab *C. kajewskio* Merr. & Perry stipulis minoribus (usque ad 32 mm longis), laminis subter furfuraceo-tomentosis indutis, denique nervis lateralibus paucioribus (18–24-jugis) differt.

Understory shrub, 2.5–3.0 m tall. *Branchlets* plagiotropic, foliated only near the ends, twigs terete *in vivo*, compressed when dried, furfuraceous at nodes, the scales primarily in axils, crowded, reddish-brown and setiform, resembling colleters, other stem surfaces puberulous or glabrescent, internodes usually 2–5 cm long. *Leaves* decussate, elliptic or oblanceolate, 23–38 × 5.0–9.8 cm, apically with a short acumen to 1.5 cm long, margins entire, base attenuate and equal; venation regularly pinnatiform, camptodromous, secondaries 18–24 pairs, arcuate, the central ones diverging 55–60° from the midrib, major veins raised above, more prominent below, reticulations prominulous on both surfaces; blades fleshy, adaxially opaque very dark green, abaxially pale green, frequently discolorous on drying: grayish-green or olivaceous above and brownish-red underneath; upper sides glabrous, minutely tuberculate (?cystoliths), undersides furfuraceous on principal veins, otherwise appressedly scalelike-hairy on the remaining surface; petioles 2–5 cm long, puberulent, adaxially channelled or plane, rounded beneath; stipules acuminate, 22–32 × 9–14 mm, basally connate for ca. 1/4 the overall length, caducous, often disintegrating irregularly and leaving a scarious residue, externally pilosulous or glabrous, adaxially furfuraceous at the base. *Inflorescence* capituliform, generally monocephalic, terminating branchlets, infrequently also from subapical axils but then depauperate, heads sessile, hemispherical or depressedly globose, 40–55 mm diam. when fully developed; receptacle discoid, densely shaggy; bracts herbaceous, dull, pink to orange, numerous, crowded, costate and with anastomosing venation, occasionally marked by linear cys-

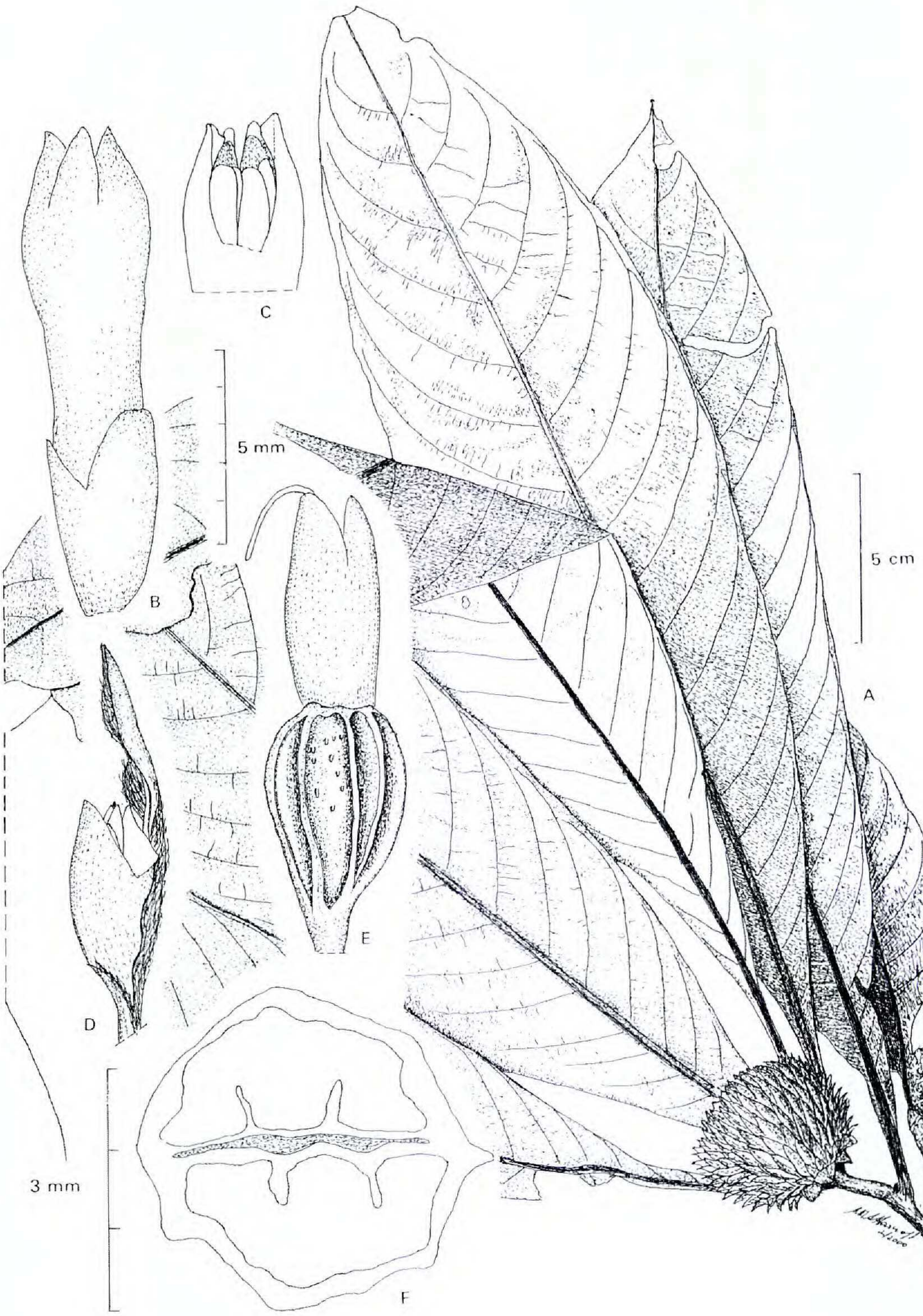

FIG. 4. *Calycosia mamosei* Takeuchi, sp. nov. A. Fertile branchlet. B. Flower from side. C. Corolla limb; one lobe removed. D. Flower bud with subtending bracteole. E. Submature fruit. F. Pyrenes in cross-section. Scale bars: A, 5 cm; B–E, 5 mm; F, 3 mm. Drawn from the type by N.H.S. Howcroft.

toliths, the outer involucral bracts largest, lanceolate to ovate-orbicular, 20–28 × 14–27 mm, usually deciduous before fruit set, internal bracts persistent, highly variable in shape and size: linear, elliptic, oblong, to broadly oblanceolate, 11.5–26 × 1.5–10 mm, lanate on margins and base; floral bracteoles oblanceolate, induplicative, bearded with a central line of hyaline filaments. *Flowers* (rehydrated measurements) obscured by the bracts, glabrous on all exterior surfaces, pedicels 1.0–1.5 mm long, pilose; calyx synsepalous, infundibular, 5.0–5.3 × 2.5–3.0 mm, lobes 2 or 3, obtuse, equal or not, 0.8–2.5 mm long, tube adaxially pilose; corolla valvate, pentamerous, cylindrical, 12.5–15.0 × 3.0 mm, lobes acute, 2.1–2.5 mm long, inner tube pilose for 2–3 mm below the throat; stamens 5, included, inserted 2 mm below the sinuses, anthers linear-sagittate, dorsifixed, 1.7–1.8 mm long, filaments 2.0–2.1 mm, provided with indument like the corolla throat; ovary bilocular, completely inferior; stigma 2-fid, lobes oblongish, 1 mm, fimbriate, style 8 × 0.2 mm, glabrous, filiform, simple; disk coarsely rugose. *Fruits* 8-sulcate or smooth, obovoid, 8–9 × 4–5 mm, exocarp opaquely yellow-orange and glabrous; pyrenes 2, planoconvex, dorsally somewhat irregular but not clearly ridged, the commissural face with two linear invaginations into each seed, albumen lacking ruminations.

Distribution and ecology.—*Calycosia mamosei* is a shade-adapted species of mature forest understories. Numerous individuals were seen on the latest survey, particularly in the elevational interval from ca. 80–200 m. The plant favors well-drained substrates but is also occasionally found on seasonally flooded ground.

The new species is endemic to PNG's northern (Mamose) region, being represented by collections from Madang, East Sepik, and West Sepik Provinces. Although abundant at Josephstaal, *C. mamosei* is probably uncommon in its other localities of occurrence.

Etymology.—The epithet reflects the plant's presently known range.

Other specimens examined: **PAPUA NEW GUINEA. West Sepik Province:** Bewani Subprovince, 1–2 km N of Bewani, about 40 km SSW of Vanimo, lowland rainforest, lat. 3° 01' S, long. 141° 10' E, 160 m, 28 Aug 1982 (fl), *J. Wiakabu et al. in LAE 73,773* (L, LAE). **East Sepik Province:** Angoram, primary rainforest, lat. 4° 04' S, long. 144° 04' E, 25 Jul 1985 (fl, fr), *L. Harkink 2* (K, L, LAE). **Madang Province:** Bogia Subprovince, Tanvid River, inland of Malolo Hotel, regrowth forest in moderately swampy area, lat. 4° 45' S, long. 145° 24'E, 200 m, 18 May 1986 (fl), *O.G. Gideon & R.J. Johns in LAE 57,325* (L, LAE); Josephstaal FMA area, Guam River near expedition Camp 2, lower slopes of natural-growth foothill forest, GPS coordinates 9497596 N, 280100 E, ca. 50 m, 11 Aug 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,877* (K, LAE); Josephstaal FMA area, Guam River, low ridge above expedition Camp 3, S of Dumadum village, natural-growth foothill forest, GPS coordinates 9498679 N, 284829 E, ca. 80 m, 21 Aug 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 14,215* (LAE).

Calycosia is distinguished by large leaves, relatively long infundibular calyces, and a capitate inflorescence surrounded by numerous bracts. It was earlier regarded as ranging from Samoa to the Solomons (Darwin 1979: 38–9). The genus has certain similarities to *Cephaelis*, and also approaches *Psychotria condensata* under Sohmer's broad concept of that genus. The Josephstaal type keys closest to *Calycosia* in Darwin (1979: 34–35).

Calycosia usually has a regularly 5-lobed calyx but in *C. mamosei* it is 2(–3) lobed. The calyx limb and inflorescence bracts are also reportedly deciduous (ibid: 38–39), but they are subpersistent in the new species. *Calycosia mamosei* is otherwise similar to the

assigned genus on other characters, particularly with respect to the long-tubular calyx and the capitate, numerously bracteate inflorescence.

The only other species of Papuasian *Calycosia* is the Solomon endemic *C. kajewskii* Merr. & Perry, from which the new species can be readily separated by a host of characters, the most obvious of these being differences in indument, stipule size, and number of lateral veins.

RUBIACEAE

Psychotria mayana Takeuchi, sp. nov. (**Fig. 5**). TYPE: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, Guam River near expedition Camp 2, lower slopes of natural-growth foothill forest, GPS coordinates 9497596 N, 280100 E, 50–100 m, 12 Aug 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,940* (HOLOTYPE: LAE; ISOTYPES: A, BRIT, K, L).

Species haec ab *P. melanocarpae* Merr. & Perry fructibus albis differt.

Branched understory shrub, or subarborescent to 5 m height. *Branchlets* terete, 3.0–5.5 mm diam., glabrescent, subapically smooth and green, on exsiccatae collapsing and compressed, fuscous. *Leaves* fleshy, rugose, adaxially very dark green and glabrous, abaxially medium green, lamina discolorous with drying: on both sides orange-brown to rufescent, rarely olivaceous, underleaf indument subappressed on costae, otherwise mostly patent, occasionally simple, more typically stellately branched or in stelliform fascicles; blades oblanceolate, 22–33 × 6–12.5 cm when mature, apex shortly acuminate, at most subcuspidate, base attenuate, equal; venation pinnate, upper surfaces inconsistently immersed-rugose, manifestly prominent beneath, secondaries equispaced, 12–24, on the large laminae always exceeding 15 pairs, straight, diverging at ca. 45–60° from the midrib, supramedially arcuate toward the margin whether or not with closing commissural loops, tertiaries subscalariform, obliquely directed at the midrib; domatia absent; petioles 2–5 cm, adaxially plane, convex beneath, glabrescent; stipules valvate, caducous, lanceolate to ovate, 14–20 × 4–10 mm, bifurcately cleft, each lobe 5–9 mm aristate, externally marked by medial ridges insensibly confluent with the aristae, coarsely shaggy, inner surfaces densely appressed-hairy. *Flowers* unknown. *Infructescence* strictly terminal, to 11.5 cm long, ebracteate, paniculiform, ramifications verticillately developed through 2–3 orders, the ultimate rachillae cymose, peduncle 1.5–4.0 cm, cernuous, all axial surfaces entirely white, with a reddish-brown vestiture of papillate or subulate hairs, these mostly spreading, often crisped. *Drupes* globose or obovoid, 9–10 × 8–9 mm, subsessile, nitid green, opaquely white when ripe, exocarp glabrescent but with lax hairs persisting at the apex and base; calyx coarsely puberulent. *Pyrenes* 2, equal or not, planoconvex, lacking dorsal crests; endosperm with a central lumen, ruminate by irregular transversal folds.

Distribution and ecology.—*Psychotria mayana* is a small tree growing in stands with multistoried canopy. It is apparently restricted to the Josephstaal area and was collected only from the foothill zone.

Etymology.—It is a pleasure to name the new species after Maya Gorrez, a biologist currently serving with the Washington office of the Nature Conservancy.

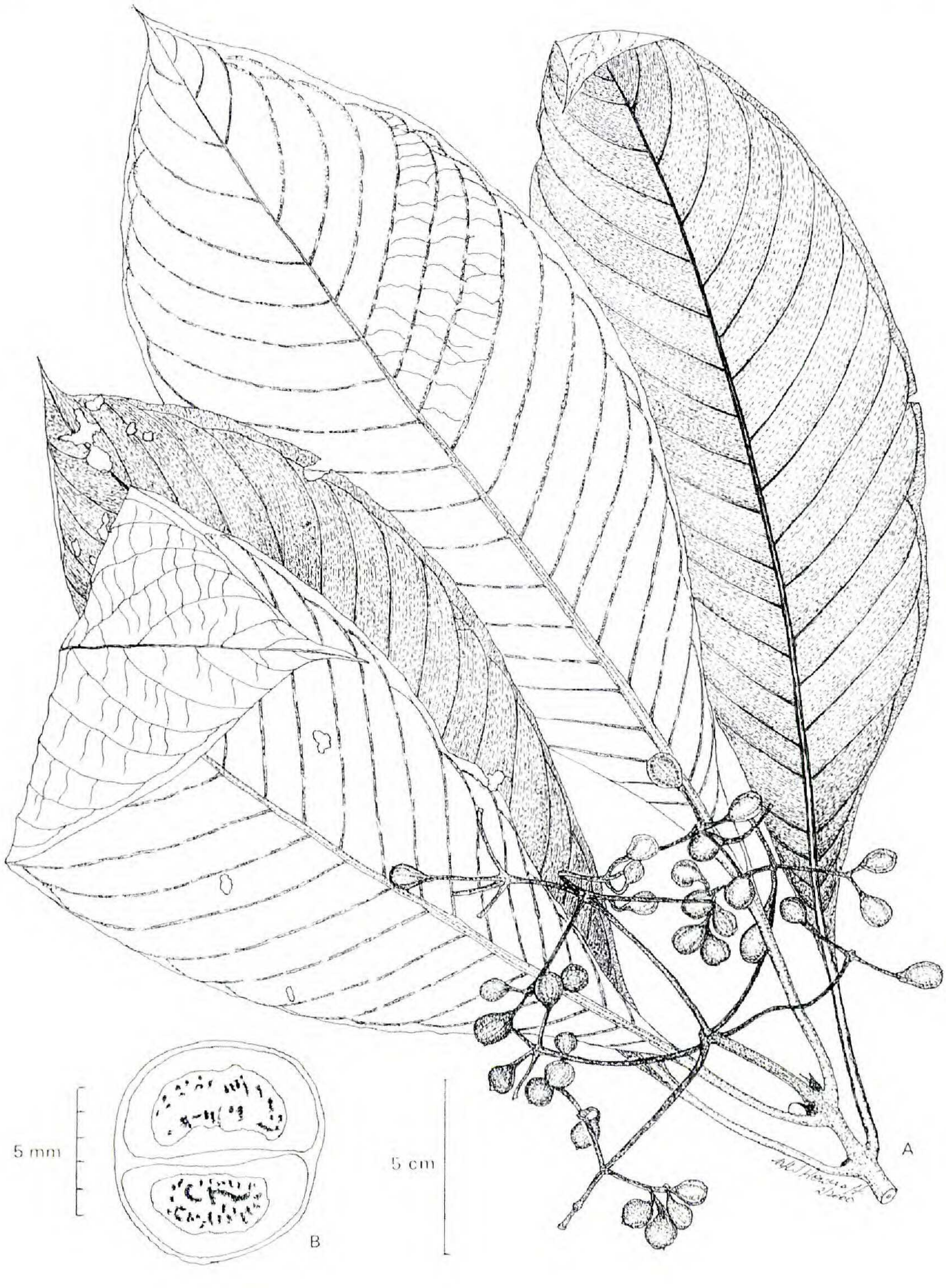

FIG. 5. *Psychotria mayana* Takeuchi, sp. nov. A. Fruiting branchlet. B. Drupe in cross-section. Scale bars: A, 5 cm; B, 5 mm. Drawn from the type by N.H.S. Howcroft.

PARATYPES: PAPUA NEW GUINEA. MADANG PROVINCE: Josephstaal FMA area, along trail to Morasapa W of expedition Camp 1 ('Kumamdeber'), mature growth foothill forest, near GPS coordinates 9504560 N, 281407 E, 160 m, 30 Jul 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,585* (BRIT, LAE); Josephstaal FMA area, Guam River near expedition Camp 2, lower slopes of natural-growth foothill forest, GPS coordinates 9497596 N, 280100 E, ca. 50–100 m, 12 Aug 1999 (fr), *W. Takeuchi, J. Wiakabu, M. Gorrez, & A. Towati 13,944* (K, LAE, NY).

Among Papuasian representatives of *Psychotria*, the underleaf hairs assembled in stelliform fascicles (or also basally branching) is a character shared only by *P. melanocarpa* Merr. & Perry. The large fruits to ca. 10 mm diameter and the biaristate stipules are also characteristic of both species. As suggested by its epithet however, *P. melanocarpa* has black fruits, while in *P. mayana* the entire infructescence is white. *Psychotria melanocarpa* is presently known only from Western Province, and *P. mayana* only from Madang Province. They are apparently geographically-separated sister species from opposite sides of the Dividing Ranges.

Psychotria mayana will key to couplet 87 (Sohmer 1988: 24) and to a group of 5 species consisting of *P. sphaerothyrsa*, *P. kaniensis*, *P. multicostata*, *P. dolichantha*, and *P. ramadecumbens*, but is not related to those species. Because *P. melanocarpa* differs from *P. mayana* in fruit color, the two are far apart on the Sohmer key and their relationship is thus not immediately apparent.

The new plant can be incorporated into the existing treatment by interposing the following couplet between forks 86 and 87 (ibid: 24) and then continuing on with the same decision train:

Underleaf indument of stelliform hairs; stipules clearly biaristate _____ **Psychotria mayana** Takeuchi

Underleaf glabrous, or pubescent with simple hairs; stipules usually cleft, but not aristate _____ to fork 87

DISTRIBUTIONAL RECORDS AND OTHER NOTEWORTHY COLLECTIONS

APOCYNACEAE

Rauvolfia moluccana Markgraf; coll. *14262*. Hendrian and Middleton (1999: 457) cite three specimens from the Bismarck Archipelago in their recent revision. Most specimens originate from Indonesia; the species being rarely recorded in the eastern half of New Guinea. Lae Herbarium previously had only one mainland collection in *Rauvolfia*.

ARACEAE

Alocasia lancifolia Engl.; colls. *13852*, *14097*, *14216*. A common aroid species, but not previously recorded for Madang Province (Hay & Wise 1991: 522).

Homalomena magna A. Hay; coll. *13849*. Previously known with certainty only from W. Sepik Province, in the Vanimo and Amanab areas (Hay 1999: 51).

The species is readily identified by the reddish spathes and dimerous male flowers (ibid: 53); characters exhibited by the Josephstaal voucher.

COSTACEAE

Tapeinochilos recurvatum K. Schum.; coll. *13700*. The plant is a highly restricted endemic, previously known from ten specimens obtained in the Gogol and South Naru drainages near Madang. Clear-cut logging is presently endangering the survival of historical populations (Gideon 1998: 325). The Josephstaal provenance represents the only occurrence whose habitat is not under immediate threat.

Tapeinochilos sp. nov.; coll. *13743*. Gideon (1998: 291) regarded this species as an undescribed *Tapeinochilos* endemic to the central part of northern New Guinea. It was previously known from four locations. The Josephstaal population extends the range significantly eastwards and is the fifth documented provenance for the novelty.

The Adelbert foothills around Madang township had earlier been thought to contain only *T. hollrungii*, *T. pubescens*, and *T. recurvatum*. The discovery of an undescribed *Tapeinochilos* from accessible terrain is yet another indication of the comparatively unexplored status of the Adelbert Range.

EUPHORBIACEAE

Cleistanthus sp., aff. ?**papuanus** (Laut.) Jabl.; coll. *13672*. Possibly new. The collection will not key on any combination of characters using Airy Shaw (1980: 58–9). It much resembles *C. insignis* in aspect, but the fruits are strigose and the vegetative indument is different from that of the latter species.

Glochidion chondrocarpum Airy Shaw, or aff.; coll. *13691*. Previously known only from several specimens obtained at Mt. Bosavi in southern PNG (Airy Shaw 1978: 372–73). Possibly rare. Now recorded on the northern side of the mainland.

The Josephstaal collection is similar to *G. chondrocarpum*, but is ramiflorous, unlike any of the species in the *G. chondrocarpum-decorum-rugulosum* group. The survey voucher is also vegetatively similar to glaucous, large-leaved species like *G. chlamydogyne*. In its ramiflory, the Josephstaal species seems to form a connection between all the preceding taxa and the strictly cauliflorous *G. beehlerii*, and could represent a new species. However the paratypes to *G. chondrocarpum* (i.e., *Jacobs 9107 & 9107A*) have fruits in dense clusters emerging near the main stem, suggesting a transition to cauliflory. Some lumping may eventually become necessary in this complex of species with similar facies, so it is prudent to preliminarily assign the name of the closest taxon to the present collection.

FLACOURTIACEAE

Casearia erythrocarpa Sleumer; coll. *13481*. Originally known only from the type specimen collected on the Fly River (Sleumer 1954: 87) but more recently discovered in the Oomsis-Gabensis areas near Lae (i.e., *Henty in NGF 16501*, and *Takeuchi 7114*).

The species has not been reported in the literature since the time of the *Flora Malesiana* revision (ibid). Its habit as an understory shrub should ordinarily make the plant easy to find, so the scarcity of herbarium specimens probably reflects actual rarity rather than simple undercollecting. With discovery of the Josephstaal population, the

species' known distribution consists of three disjunct stations with (probably) low frequencies at each locality.

ICACINACEAE

Rhyticaryum novoguineense (Warburg) Sleumer; colls. *13947, 14192. Rhyticaryum novoguineense* is easily distinguished from congeners by the paniculate inflorescences. The plant is restricted to Madang and Morobe Provinces, and at the time of the latest revision (Sleumer 1971) was represented in herbaria by three specimens. LAE has only two sheets of this taxon.

PROTEACEAE

Helicia affinis Sleumer; coll. *13997*. An arborescent species known only from lowland environments in Madang Province. As a restricted endemic, *H. affinis* is the kind of plant likely to be endangered by introduction of logging operations to the management area.

The expedition voucher is a fruiting collection and thus cannot be keyed on existing treatments (Foreman 1976, 1995; Sleumer 1955). It resembles both *H. latifolia* and *H. finisterrae* in aspect, but the appressedly puberulous underleaf is more similar to *H. latifolia*. The surface scrape on the drupe is conspicuously purple, a feature exhibited by several Papuasian congeners, though not previously noted for this particular species.

RUBIACEAE

Psychotria dipteropoda Laut. & K. Schum.; colls. *13831, 13869, 14045, 14200. Psychotria dipteropoda* had not been seen for nearly a century until its rediscovery during the TNC surveys. The type collection was obtained in the Gogol drainage in 1890, but was subsequently lost during the WWII destruction of Berlin Herbarium. The most recent of the surviving collections was obtained in 1907, even though many botanists have visited and collected from the plant's former localities.

Psychotria dipteropoda occurs only in tall-growth stands beneath intact canopy, on the alluvial flats adjacent to flowing streams. This kind of plant is likely to be highly susceptible to anthropogenic disturbance; firstly, because riverine borders are environments easily altered by human entry into wilderness habitats, and secondly, because its consistent association with advanced growth shows this plant does not flourish in seral situations. Though not a rheophyte, *P. dipteropoda* is apparently adapted to conditions in the seasonal surge zone on river verges. The Gogol and Ramu drainages have been seriously impacted by habitat alteration since the early 1900s, and this is almost certainly the cause for the plant's disappearance from its historical range.

Although the Josephstaal colonies represent the only known occurrences of the species, it is moderately frequent within the Guam drainage. Most sightings were of sterile individuals, but could still be identified because of the undulate blades and the plant's consistent association with a narrowly defined habitat.

The ripe fruit on *P. dipteropoda* is unexpectedly yellow. Fruits of *P. talasensis* have a yellow or orange phase, but the drupe matures to a conventional red (Sohmer 1988: 278), while in *P. dipteropoda* yellow is apparently the ripe color.

Psychotria sp. nov.; coll. *13514*. An undescribed monocaulous species with a marked resemblance to *Maschalodesme*, except that the fruit has two pyrenes.

Psychotria sp. ?nov.; colls. *13451*, *13756*. A vining species. The lianous *Psychotria* are unrevised for Papuasia, having been last treated by Valeton (1927).

The Josephstaal collections are unusual for their extremely membranous leaves and the oblong cystoliths densely marking all surfaces, including the inflorescence. The flowers are small, sessile, and glomerulate on lax rachides. Although possibly new, the status of this plant can be definitely established only through revision of the vining taxa.

Versteegia grandifolia Valeton; coll. *13405*. A rare species from the pachycaul alliance, previously represented by three specimens from West Irian. In their synopsis of the genus, Ridsdale et al. (1972: 340) had specified the plant's distribution only as 'mainland New Guinea.' Collection *13405* keys directly to the above binomial and conforms precisely to Valeton's (1911: tab LXXIII) plate. Although Lae Herbarium has no specimens of this species for comparison, the taxon's distinctive characteristics permit identification from the literature.

The Josephstaal plants were identified as 'wanam-barewa' by village respondents. When the stems are used as a planting implement, they are said to increase crop yields (Wiakabu and Gorrez, field notes).

Josephstaal villagers are also aware of the distinction between this species and the more common *V. cauliflora*, as indicated by their conferral of the different name 'waipa' to the latter. In this particular instance, traditional knowledge conforms to formal taxonomic concepts in Western science. The belief that *V. grandifolia* is connected to increased crop yields is possibly related to its more robust habit in comparison to *V. cauliflora*. It can be surmised that the oversized leaves from the *grandifolia* facies have become associated with a special capacity for growth, which is then transferred when the larger species is used as a planting tool.

RUTACEAE

Wenzelia dolichophylla (Laut. & K. Schum.) Tanaka; colls. *13594*, *13623*. *Wenzelia* is a member of the subfamily Aurantioideae and remains imperfectly understood despite the potential horticultural value of its alliance. Only six collections of *W. dolichophylla* were known at the time of the last published commentary on these plants (Stone 1985).

Swingle (1967) established two subgenera but was unable to assign *W. dolichophylla* into either one due to lack of adequate material. In the ripe fruiting specimens now at hand from Josephstaal, the thin seeds with irregular hyaline margins make it clear that *W. dolichophylla* belongs to his subgenus *Papualimo*. Stone (1985: 214–15) did not provide a subgeneric affinity for *W. dolichophylla* and expressed doubt whether Swingle's seed characters were sufficient for recognition of subgenera.

The Josephstaal plants have wide leaves with prominent and anastomosing secondaries similar to those from the Sepik populations. However the bicolorous blades with divaricate laterals otherwise agree with features more generally characteristic of *W. dolichophylla*. The red hesperidium (salmon-pink on *13594* and pinkish-red on *13623*) is

distinctive; other aurantioid taxa are usually orange-yellow. Since most collections of *W. dolichophylla* originate from the Ramu-Gogol drainage, it is very likely that the survey vouchers are correctly placed under this binomial.

Zanthoxylum conspersipunctatum Merr. & Perry; coll. *13636*. The tree is a montane species from elevations above 1500 m (Hartley 1966: 205) and is primarily known from the Highlands Provinces. The expedition gathering is a first record for Madang Province. More significantly, the elevation of collection at ca. 160 m is anomalous and represents a significant extension of the species' vertical range.

The Josephstaal voucher has a number of atypical characters which initially obscured its generic identity. At the time of collection, spines were not visible on the branchlets, the leaflets were epunctate, and the foliage showed no evidence of resinous content. *In sicco*, spiculate excrescences only became evident after collapse of the branchlet. The taxonomic concept for *Z. conspersipunctatum* sensu Hartley is that of a polymorphic complex, since the species consists of numerous distinctive forms which cannot be assembled into discretely repeating units. Although the Josephstaal specimen keys to *Z. conspersipunctatum*, it does not match any conspecific LAE sheet in appearance, so its status is uncertain.

STILAGINACEAE

Antidesma katikii Airy Shaw; coll. *13729*. The species is represented in herbaria by few collections, having been discovered only fairly recently (i.e., 1968 by *Katik in NGF 32762*). All gatherings have originated in the Ramu-Gogol basins. During the 1995 Bismarck Mts. expedition, large populations were recorded and documented near the 600 m level and the species did not appear to be as rare as the small number of collections might suggest (Takeuchi 1999a: 763). With its discovery at Josephstaal, the distribution of *A. katikii* now extends across both sides of the Ramu drainage and the plant is certainly more common than previously supposed, though remaining endemic to Madang Province.

The recency of its discovery, and the uncertainties over the conservation status of *A. katikii*, are circumstances applicable to many other Papuasian taxa. This situation is a natural outcome of the uneven state of floristic exploration in PNG. Botanical collecting in Madang Province has been heavily focused on the Gogol and Ramu basins, yet the Josephstaal populations are within a mere half-day walk from the principal coastal highway. Clearly, there is much work remaining to be done in the floristic documentation even of accessible areas.

TILIACEAE

Microcos sp. ?nov.; colls. *13469, 13562, 13732, 13830, 14104*. The Josephstaal specimens apparently represent a new species distinguished by a bilayered indument of erect simple hairs with smaller stellate hairs underneath (most Papuasian taxa are lepidote). The plant has been collected in several of the north coast districts and possibly also from the Gulf region of PNG. Although undescribed, this is attributable to taxonomic neglect of the genus rather than to biological scarcity.

ZINGIBERACEAE

Etlingera sp. ?nov. (series **Polyanthae**); coll. *13985*. A nomenclatural conspectus of the genus by R.M. Smith (1986) made many transfers from *Achasma*, *Geanthus*, and *Nicolaea*. Most of the Papuasian species were treated by Valeton (1913, 1914) as *Geanthus*, and were depicted with excellent illustrations in early issues of *Nova Guinea*.

The flowers of the Josephstaal collection are unlike those from any species formerly included in *Geanthus* sensu Valeton. Obvious points of distinction are the unusual subfoliaceous wings at the top of the staminal column and the flat paired nectaries at the style base.

THE JOSEPHSTAAL FLORA IN OVERVIEW

Although the Gogol basin near Josephstaal represents one of PNG's better-explored localities, its vegetation has been extensively degraded in recent decades by clear-cut logging. During the severe drought of 1941, a major part of the Gogol was destroyed by fire (Johns 1986: 351) so it is reasonable to assume that a significant but unknown part of the former flora has already been eliminated, especially when past events are considered in light of the alterations occurring today.

Josephstaal is the largest lowland wilderness remaining near Gogol, and not unexpectedly contains many taxa recorded from the latter locality. The records for *Psychotria dipteropoda*, *Rhyticaryum novoguineense*, and *Tapeinochilos recurvatum*, exemplify the similarities between the Josephstaal and Gogol floras. These similarities can be understood in terms of new evidence showing that distributions of New Guinea endemics are correlated to geohistorical phases of terrane accretion (Balgooy et al. 1996: 201 and fig. 16). On the basis of the geological relationship, additional linkages can be anticipated between Josephstaal and the adjacent Gogol-Ramu drainages, because the localities were all part of the same accretional phase in New Guinea's paleohistory. *Illigera novoguineensis* is thus more likely to be rediscovered at Josephstaal than from the now-disturbed historical habitats in the Madang-Ramu area. The species is still known from only three collections dating to ca. 1900 (Croft 1981: 201; Duyfjes 1996: 759). With further exploration of the project tract, other narrow endemics like *Cynometra katikii* might also be found. There is a distinct possibility that *Lauterbachia* will finally be recovered within the JFMAA.

From compilation of completed revisions in the *Flora Malesiana* series, Balgooy et al. (1996: 198) concluded that the number of endemic species from northern New Guinea is higher than from other Malesian areas. It follows from their conclusion, that exploration of poorly surveyed parts of the northern sector is likely to uncover substantial numbers of previously unknown taxa. The discoveries from the recent TNC surveys are consistent with the Adelbert's position in the NE quarter of the Island and the high endemicity associated with northern New Guinea as a whole (ibid). There are general grounds for predicting that future exploration will yield additional discoveries, especially since the higher elevations at Josephstaal have not been examined. Most Papuasian endemics are montane species, though from the past emphasis on montane exploration, it is ap-

parent that the higher-elevation percentages are overstated in relation to the lowland component (ibid: 200; Conn 1994: 125, 128). The discoveries within the project tract are partly a consequence of the poor attention historically devoted to lowland environments.

Because many endemic taxa are shared between the Gogol and Josephstaal localities, it is natural to ask why the new plants had not been found during previous surveys of the Gogol and Ramu drainages. The novelties are visually conspicuous and with attributes which should ordinarily have ensured earlier discovery. If the new taxa had indeed once ranged into similar habitats in the Gogol-Ramu basins, they were probably eliminated there by the environmental upsets of the 1900s, otherwise they would have already entered the botanical record. Circumstances are consistent with the premise that population extinctions are occurring in the modern period without the populations ever being detected.

The TNC surveys point to a possibility that Josephstaal environments are refugia for remnant populations extirpated from other parts of their range. Future work should be deliberately structured in ways to evaluate this presumed status. However the perceptions arising from the recent surveys also need to be weighed against the inadequacy of existing information on the New Guinea flora. Despite its status as a center for biotic diversification, PNG has the dubious distinction of being one of Malesia's worst surveyed nations (Stevens 1989: 127). On a regional comparison, only the Celebes and Sumatra have comparably low collection densities (ibid). While it is generally conceded that certain mountainous areas are hotspots for floristic endemism, the low-elevation centers are not easy to identify. When documentation coverage is so incomplete, it is difficult to be sure if patterns determined by current surveys are real. It may be just as plausible to argue that presumed connections between Josephstaal and adjacent areas might be overturned, if more information were available on the surrounding region.

A total of 139 families, 445 genera, and 730 distinct morphospecies, have been collected at Josephstaal (Appendix 1). An unknown proportion of the flora remains undocumented. The 41 alien species (exclusive of cultivated plants) recorded by the surveys represent 5.6 % of the checklist. For a Papuasian wilderness tract, this is a comparatively high count, which can be attributed to Josephstaal's proximity to provincial population centers and the resulting exposure to anthropogenic influence. The presence of dirt roads into the project sites has no doubt facilitated entry of introduced plants. An instructive contrast can be drawn between these alien elements at Josephstaal and those from more isolated sites accessible only by air travel. Remote landlocked areas in the Lakekamu basin and Bismarck-Ramu Range were recently assessed on the same protocols (including attention to weeds) as the Josephstaal inventory; and with an equivalent search investment of one-month duration. These latter evaluations produced an alien naturalized count of 8 species (1.2% of the total) for Lakekamu (Reich 1998; Takeuchi & Kulang 1998), and 9 species (1.5 %) for Bismarck-Ramu (Takeuchi 1999a). At Crater Mt. a more intensive survey found 24 alien species comprising 1.8% of all recorded taxa (Takeuchi 1999b). These figures suggest that collection of alien plants can be prof-

itably integrated into future schedules as an independent means for determining the relative quality of evaluated habitats. Investigators have an understandable preference for focusing on indigens during site assessments, but the adventives may actually provide a more practical indicator of habitat preservation and isolation.

None of the weeds recorded at Josephstaal poses any threat to the environment, with most of the introductions consisting of benign herbs restricted to repetitively disturbed ground (*Piper aduncum* excepted). The presence of anthropogenous plants is an unwanted condition in any wilderness habitat, but alien occurrences are inevitable whenever an area is relatively easy to enter. Within PNG, conservation easements and land units comparable to Josephstaal are usually very isolated environments, and thus logistically difficult to botanize. The accessibility of Josephstaal's high-value habitats is a marked contrast to these other venues. Although proximity to urban centers causes greater exposure to unwanted factors, it can also foster scientific research and community-based development, because of the comparative ease of operations afforded by convenient access. The combination of biodiverse wilderness with low cost logistics, will enable consideration and implementation of a wide range of planning alternatives for the project tract.

APPENDIX 1
LIST OF PLANT TAXA FROM JOSEPHSTAAL

Voucher source for occurrence record: NGF = collections from the New Guinea Force series, P&C = B.S. Parris and J.P. Croxall, T = W. Takeuchi, J. Wiakabu, M. Gorrez, and A. Towati, T&S = W. Takeuchi and E. Saxon, sn = sin numéro (without number), SR = sight record of taxon known to the project botanist. Other collectors indicated by name. Determinations by WT unless otherwise noted.

FERNS AND FERN ALLIES

ADIANTACEAE

Adiantum philippense L.; *T 13436, 14254*

ASPLENIACEAE

Asplenium affine Swartz, '*affine-cuneatum* group' (cf. Copeland 1949: 220–221, Sledge 1962: 408); *T 13490*

Asplenium cf. *amboinense* Willd., '*amboinense-papuanum* group' (cf. Copeland 1949: 212); *T 13649, 13745, 13893*

Asplenium cuneatum Lamk, '*affine-cuneatum* group'; *T 14255*

Asplenium nidus L. var. nidus; *T 13943*

Asplenium phyllitidus Don ssp. *malesicum* Holttum; *T 13590*

Asplenium subemarginatum Rosenst.; *T 13928*

Asplenium tenerum Forst.; *T 14181*

Diplora d'urvillaei (Bory) C. Chr.; *T 13450, 13800, 14241*

ATHYRIACEAE

Callipteris prolifera (Lamk) Bory; *T 13605, 13843,* also *P&C 8401*

Callipteris spinulosa (Blume) J. Smith; *T 13919*

Callipteris sp., aff. *spinulosa* (Blume) J. Smith; *P&C 8400*

Diplazium sp.; *T 13662*

BLECHNACEAE

Stenochlaena milnei Underw.; *T 13891*

CYATHEACEAE

Cyathea sp.; *T 14118*

DAVALLIACEAE

Davallia solida (Forst.) Swartz; SR, occasional throughout area

Davallia sp., section *Humata*; SR, sterile, throughout area

Davallia sp.; *K.J. White in NGF 10285*, cited in NGF files but not found at LAE

DENNSTAEDTIACEAE

Dennstaedtia scandens (Blume) T. Moore; *T 14072*
Microlepia speluncae (L.) T. Moore; *T 14107*

EQUISETACEAE

Equisetum ramosissimum Desf. ssp. *debile* (Vauch.) Hauke; *T 13873, 14242*

GLEICHENIACEAE

Dicranopteris linearis (Burm. f.) Underw.; SR, burn areas near Roumirap

HYMENOPHYLLACEAE

Cephalomanes atrovirens Presl; *T 13546, 13903, 14170*

LINDSAEA GROUP

Lindsaea obtusa J. Smith; *T 13540, 13894, 13904, 13935, 14180*
Lindsaea tenuifolia Blume; *T 13489, 13529, 13924, 14182*
Sphenomeris retusa (Cav.) Maxon; *T 14138*

LOMARIOPSIDACEAE

Bolbitis heteroclita (Presl) Ching; *T 13883*
Bolbitis quoyana (Gaud.) Ching; *T 13589, 13657*
Bolbitis cf. *quoyana* (Gaud.) Ching; *T 13488, 13615*
Lomagramma cf. *sinuata* C. Chr., closer to *sinuata* than *L. melanolepis* v.A.v.R.; *T 13865*, cf. *P&C 8361*
Lomariopsis kingii (Copel.) Holttum; *T 13665*

LYCOPODIACEAE

Huperzia cf. *squarrosa* (Forst. f.) Trevisan; *T 13693*
Palhinhaea cernua (L.) Vasc. & Franco; SR, foothill forest

MARATTIACEAE

Angiopteris evecta (Forst.) Hoffm.; SR, Guam River

OLEANDRACEAE

Nephrolepis biserrata (Swartz) Schott; *T 14078*
Nephrolepis (close to) *biserrata* (Swartz) Schott; *T 13962*

OPHIOGLOSSACEAE

Helminthostachys zeylanica (L.) Hooker; *T 14080*
Ophioglossum nudicaule L. f.; *T 14299*
Ophioglossum pendulum L.; SR, foothill forest

POLYPODIACEAE

Aglaomorpha drynarioides (Hooker) Roos; *T 13872*
Aglaomorpha heraclea (Kunze) Copel.; *T 14010*
Drynaria sparsisora (Desv.) T. Moore; *T 13978*
Goniophlebium percussum (Cav.) Wagner & Grether; *T 14281*
Lemmaphyllum accedens (Blume) Donk; *T 13435, 13611*
Microsorum linguiforme (Mett.) Copel.; *T 13651, 13900*
Microsorum membranifolium (R. Br.) Ching; *T 13431, 13996*
Microsorum papuanum (Baker) Parris; *T 13975*
Microsorum punctatum (L.) Copel.; SR, alluvial forest
Platycerium wandae Racib.; SR, alluvial forest and near Roumirap
Pyrrosia lanceolata (L.) Farwell; *T 14018*
Pyrrosia princeps (Mett.) Morton; *T 13515, 13660, 13983*

PSILOTACEAE

Psilotum nudum (L.) Palisot de Beauvois; *T 14000*

PTERIDACEAE

Pteris ensiformis Burm. f.; *T 14253*
Pteris gardneri (Fée) Hooker; *T 14099*
Pteris ligulata Gaud.; *T 13626, T 13953*, also *P&C 8398*
Pteris pacifica Hieron.; *P&C 8387*
Pteris cf. *torricelliana* Christ, '*P. excelsa* Gaud. facies'; *T 14256*
Pteris tripartita Swartz; *T 13650, 14039*
Pteris warburgii Christ; *T 13632*, also *P&C 8385*

SCHIZAEACEAE

Lygodium circinnatum (Burm. f.) Swartz; *T 13493, 14204*
Lygodium dimorphum Copel.; *T 14081*
Schizaea dichotoma (L.) Sm.; *T 13528*

SELAGINELLACEAE

Selaginella cf. *longiciliata* Hieron.; *T 14146*
Selaginella cf. *velutina* Cesati; *T 13539*
Selaginella sp., aff. *?hieronymiana* v.A.v.R.; *T 13531, 13906*

TECTARIA GROUP

Pleocnemia macrodonta (Fée) Holttum; *T 13492, 13684*
Tectaria bamleriana (Rosenst.) C. Chr.; *T 14002*
Tectaria menyanthidis (Presl) Copel.; *T 13454*
Tectaria pleiosora (Alderw.) C. Chr.; *P&C 8384*
Tectaria repanda (Willd.) Holttum; *T 14074*
Tectaria sp., aff. *?teratocarpa* (Alderw.) C. Chr.; *T 14079*

THELYPTERIDACEAE

Plesioneuron tuberculatum (Cesati) Holttum; *T 13633*
Pneumatopteris sogerensis (Gepp) Holttum; *T 13604*
Pneumatopteris sp., aff. *keysseriana* (Rosenst.) Holttum; *T 13882*
Pronephrium micropinnatum Holttum; *T 13412*, also *P&C 8395*

Sphaerostephanos acrostichoides (Desv.) Holttum; *T 14259*
Sphaerostephanos (closest to) *acrostichoides* (Desv.) Holttum; *T 13664*
Sphaerostephanos arfakianus (Baker) Holttum; *T 13416*, also *P&C 8402*
Sphaerostephanos invisus (Forst. f.) Holttum; *T 14001, 14144*
Sphaerostephanos pilososquamatus (v.A.v.R.) Holttum; *T 13690*
Sphaerostephanos unitus (L.) Holttum var. *mucronatus* (Christ) Holttum; *T 14109*

VITTARIACEAE

Antrophyum cf. *reticulatum* (Forst.) Kaulf., '*callifolium-reticulatum* complex' (cf. Holttum 1954: 605); *T 13902*
Vittaria elongata Swartz var. *elongata*; *T 13656, 14017*

GYMNOSPERMS

CYCADACEAE

Cycas schumanniana Laut.; SR, ridge near Wagadab

GNETACEAE

Gnetum costatum K. Schum.; *T 13725, 13964, 14106*
Gnetum gnemon L.; *T 13758*
Gnetum gnemonoides Brongn.; *T 13439*
Gnetum sp.; *K.J. White in NGF 10255*, cited in herbarium log but not found at LAE

PODOCARPACEAE

Podocarpus rumphii Blume; *K.J. White in NGF 10293*, det. D. de Laubenfels
Podocarpus cf. *rumphii* Blume; *T 13492*

DICOTS

ACANTHACEAE

Blechum brownei Juss.; *T 14051*
Calycacanthus magnusianum K. Schum.; *T&S 13086, T 13574*
Dicliptera papuana Warburg; *T 13859*
Graptophyllum pictum (L.) Griff.; *T&S 13070, 13084, T 13720*
Hulemacanthus novoguineensis (Lindau) Bremek.; *T 13730*
Hypoestes floribunda R. Br. var. *neoguineensis* R.M. Barker; *T 13544*
Justicia gendarussa Burm. f.; *T 13655*
Justicia sp.; *T 13429, 13434, 14203*
Lepidagathis cf. *royenii* Bremek.; *T&S 13079*
Odontonema cuspidatum (Nees) Kuntze; *T 14135*
Pseuderanthemum sp., cf. '*variabile* group' sensu Barker (1986: 146–156); *T 13678*
Ptyssiglottis pubisepala (Lindau) B. Hansen; *T 13413, 13658*, also *Pullen 1067*, det. B. Hansen
Ruellia sp. (*Leptosiphonium*); *T 13427, 13738*
Rungia sp., aff. ?*klossii* S. Moore; *T 14272*
Strobilanthes sensu lato, *Hemigraphis primulifolia* (Nees) F. Vill. facies; *T 13889, T 14147*
Strobilanthes sensu lato (*Hemigraphis* sp.); *T 13453, 13583, 13587, 13679*

ACTINIDIACEAE

Saurauia conferta Warburg; *T 13981*
Saurauia schumanniana Diels, or aff.; *T 14285*
Saurauia sp., series *Obvallatae*, aff. ?*stichophlebia* Diels; *T 14117*

ALANGIACEAE

Alangium villosum (Blume) Wangerin ssp. *ferrugineum* (C.T. White) Bloembergen; *T&S 13103, T 13674, 13828*

AMARANTHACEAE

Achyranthes bidentata Blume; *T 13898*
Amaranthus dubius Thell.; *T 13874*
Celosia argentea L.; SR, Guam R. streambed and margins

ANACARDIACEAE

Buchanania macrocarpa Laut.; *T 13598*
Dracontomelon lenticulatum Wilkinson; *T 14012*, also *K.J. White in NGF 10312*, det. D. Frodin
Mangifera minor Blume; SR, Guam alluvial forest
Rhus taitensis Guillemin; *K.J. White in NGF 10309*, det. Ding Hou; also SR at Camp 2
Semecarpus brachystachys Merr. & Perry; *T 13740*
Semecarpus forstenii Blume; *T 13832, 14171, 14250*
Semecarpus magnificus K. Schum.; *T 14217*

ANNONACEAE

Cananga odorata Hooker f. & Thoms.; SR, Guam River
Cyathocalyx papuanus Diels, or aff.; *T 13507*
Cyathocalyx sp. ?nov.; *T 13458*
Goniothalamus aruensis Scheffer; *K.J. White in NGF 10228*, det. K. Salleh
Goniothalamus cf. *aruensis* Scheffer; *T&S 13093*
Goniothalamus cf. *imbricatus* Scheffer; *T 13475, 13639, 13840, 13948, 13950, 14172, 14186*
Goniothalamus sp.; *T&S 13058, T 13695, 14093*
Haplostichanthus longirostris (Scheffer) van Heusden; *T 13835, 14233*
Petalolophus sp., aff. *megalopus* K. Schum.; *T 13754, 13769*
Popowia sp., aff. *pisocarpa* (Blume) Endl.; *T 13447, 13773*
Popowia sp.; *T 13748*
Pseuduvaria sp., aff. ?*versteegii* (Diels) Merr.; *T 13500*
Pseuduvaria sp. A; *T 13751, 13857, 14061, 14070*

Pseuduvaria sp. B; *T&S 13054, T 13423, 13733, 13856*
Pseuduvaria sp. C.; *T 13507*
cf. *Xylopia* sp.; *T&S 13064*, also *K.J. White in NGF 10272*

APOCYNACEAE

Alstonia scholaris (L.) R. Br.; SR, foothill forest
Anodendron oblongifolium Hemsl.; *T 13659*
Cerbera floribunda K. Schum.; *T 13518, 13990*
Melodinus cf. *acutus* (Markgraf) Markgraf; *T 13494*
Melodinus forbesii Fawc.; *T 14309*
Neisosperma citrodorum (Laut. & K. Schum.) Fosb. & Sach.; *T 13907, 14207*, also *K.J. White in NGF 10227*, det. F. Markgraf
Ochrosia coccinea (Teijsm. & Binn.) Miq.; *T 13998*
Parsonsia curvisepala K. Schum.; *K.J. White in NGF 10318*, det. P.I. Forster
Parsonsia lata Markgraf; *T 14297*
Parsonsia oligantha (K. Schum.) D.J. Middleton; *T 14123, 14263*
Rauvolfia moluccana Markgraf; *T 14262*
Tabernaemontana aurantiaca Gaud.; *T 13510, 13802*
Tabernaemontana orientalis R. Br.; *T 13887*
Tabernaemontana pandacaqui Lam., sensu Forster (1992: 528–529); *T&S 13080, T 14205*
Voacanga grandifolia (Miq.) Rolfe; *T 14290*

ARALIACEAE

Gastonia spectabilis (Harms) Philipson; *T 13498*
Mackinlaya celebica (Harms) Philipson; *T 13570*
Osmoxylon boerlagei (Warburg) Philipson; *T 14279*
Osmoxylon novoguineense (Scheffer) Becc.; SR, disturbed areas near Roumirap
Osmoxylon sessiliflorum (Laut.) Philipson; *T 13912*
Osmoxylon (closest to) *sessiliflorum* (Laut.) Philipson; *T&S 10353-B, T 13836*
Schefflera sp.; SR, high epiphyte in overstory of foothill forest

ARISTOLOCHIACEAE

Pararistolochia schlechteri (Laut.) M.J. Parsons; *T 13926*

ASCLEPIADACEAE

(dets. by P.I. Forster unless otherwise indicated)
Asclepias curassavica L.; *T 14245*, det. WT
Hoya anulata Schltr.; *T 14284*
Hoya pottsii Traill; *T 13536, 14289*
Hoya sp.; *K.J. White in NGF 10323*
Marsdenia velutina R. Br.; *T 14229*
genera indet.; *T 13786, 14124*

ASTERACEAE

Ageratum conyzoides L.; *T 13718*
Bidens pilosa L. var. *minor* (Blume) Sherff; *T 14131*
Blumea arfakiana Martelli; *T 13419, 13612, 13791*
Blumea riparia (Blume) DC.; *T 13669*
Blumea riparia (Blume) DC. f. *riparia*; *K.J. White in NGF 10319*, det. J. Koster
Cosmos caudatus HBK; *T&S 13073*
Crassocephalum crepidioides (Benth.) S. Moore; *T 13648*
Eclipta prostrata (L.) L.; *T 13793, 13861, 14088*
Emilia sonchifolia (L.) DC. var. *javanica* (Burm.) Mattfeld; *T 14244*
Erechtites valerianifolia (Wolf) DC.; *T 13815*
Mikania cordata (Burm. f.) B.L. Rob. forma *villosa* Koster; *T 13654*
Synedrella nodiflora (L.) Gaertner; *T 13772, 14236*
Vernonia arborea Ham. var. *mollissima* (Ridl.) Koster; *T&S 13085, T 14261*
Wedelia biflora (L.) DC.; *T 13809*

BALSAMINACEAE

Impatiens hawkeri Bull; *T 13790*

BARRINGTONIACEAE

Barringtonia apiculata Laut.; *Robbins 1667*
Barringtonia calyptrocalyx K. Schum. var. *mollis* Laut.; *T&S 13067, T 13567, 13576*
Barringtonia josephstaalensis Takeuchi; *T 13796, 13973*
Planchonia papuana Knuth; *K.J. White in NGF 10250*, det. K. Kartawinata

BEGONIACEAE

Begonia papuana Warburg; *T 13417, 13543, 13545, 13884*
Begonia pseudolateralis Warburg; *T 14420, 14422*

BIGNONIACEAE

Pandorea cf. *pandorana* (Andr.) Steen.; *T 14246*, det. K. Damas
Tecomanthe dendrophila (Blume) K. Schum.; *T 13766, 14060*

BIXACEAE

Bixa orellana L.; SR, cultivated

BOMBACACEAE

Bombax ceiba L.; SR, foothill forest

BORAGINACEAE

Tournefortia sarmentosa Lamk; *T 14193*

BURSERACEAE

Canarium acutifolium (DC.) Merr. var. *acutifolium*; *K.J. White in NGF 10254*
Canarium vitiense A. Gray; *T&S 13109, T 14234*, also *K.J. White in NGF 10325*
Haplolobus floribundus (K. Schum.) H.J. Lam; *K.J. White in NGF 10275*, cited in Leiden determination lists but specimen not found at LAE

CAESALPINIACEAE

Bauhinia ampla Span.; *T 14044*
Caesalpinia bonduc (L.) Roxb.; *T 14042*
Caesalpinia sumatrana Roxb.; SR, across river from Camp 2
Cassia alata L.; *T 13797*
Intsia bijuga (Colebr.) Kuntze; *T 13692*
Kingiodendron alternifolium (Elmer) Merr.& Rolfe; *T 14126*
Maniltoa cynometroides Merr. & Perry; *K.J. White in NGF 12095*, det. B. Verdcourt
Maniltoa plurijuga Merr. & Perry; *T 13984*
Maniltoa rosea (K. Schum.) Meeuwen; *K.J. White in NGF 10226, 10301*, det. M. van Meeuwen
Maniltoa schefferi K. Schum. & Hollrung; *T 13571, 13783, 14011*

CARICACEAE

Carica papaya L.; SR, ?naturalized

CARYOPHYLLACEAE

Drymaria cordata (L.) Willd. ex Roem & Schult.; SR, Guam R.

CECROPIACEAE

Poikilospermum amboinense Zipp. ex Miq.; *T 13804, 13977*
Poikilospermum (probably) *amboinense* Zipp. ex Miq.; *T 14041*, also *K.J. White in NGF 10244*

CELASTRACEAE

Salacia erythrocarpa K. Schum.; *T 14240*

CHLORANTHACEAE

Chloranthus erectus (Buch.-Ham.) Verdcourt; *T 13752*

CLUSIACEAE

Calophyllum sp.; SR, scattered sightings of sterile individuals throughout area
Garcinia cf. *celebica* L.; *T 14159*
Garcinia dulcis (Roxb.) Kurz; *T 13839*
Garcinia hollrungii Laut.; *K.J. White in NGF 10313*, det. P.F. Stevens
Garcinia klinkii Laut., or aff.; *K.J. White in NGF 10267*, det. P.F. Stevens
Garcinia maluensis Laut.; *T&S 13083, T 13477, 13511*
Garcinia sp.; *K.J. White in NGF 10257*

COMBRETACEAE

Terminalia complanata K. Schum.; *T 13991*, also *K.J. White in NGF 10266*, det. M.J.E. Coode
Terminalia impediens Coode; *T 13951, 13952*

CONVOLVULACEAE

Ipomoea congesta R. Br.; *T 13722*
Merremia peltata (L.) Merr.; *T 13726*
Operculina riedeliana (Oliv.) Oostroom; *T 14235*

CUCURBITACEAE

Alsomitra macrocarpa (Blume) Roem.; SR, Camp 3, cf. *Pullen 1096*
Cucurbita sp.; *T 13871*
Trichosanthes sp., '*longiflora-bracteata* group' (cf. Harms 1925: 159); *T 13910*
Zehneria mucronata (Blume) Miq.; *T 13609, 13954*

DATISCACEAE

Octomeles sumatrana Miq.; SR, very common emergent in alluvial zone

DICHAPETALACEAE

Dichapetalum sessiliflorum Leenh.; *T 13851, 14065*

DILLENIACEAE

Dillenia castaneifolia (Miq.) Martelli ex Dur. & Jacks.; *T&S 13050, T 14268*
Tetracera nordtiana F.v.M.; *T 13905*

DIPTEROCARPACEAE

Vatica rassak (Korth.) Blume; *T 14208*

EBENACEAE

Diospyros papuana Valeton ex Bakh.; *T 13577, 13915*
Diospyros pulchra Bakh.; *K.J. White in NGF 10261*
Diospyros rostrata (Merr.) Bakh.; *T 13764*, det. K. Damas

ELAEOCARPACEAE

Aceratium ledermannii Schltr.; *T 13671, 13946*
Elaeocarpus amplifolius Schltr.; *K.J. White in NGF 10256*, det. M.J.E. Coode
Elaeocarpus sphaericus (Gaertn.) K. Schum.; SR, Camp 2
Sloanea sogerensis Baker f.; *T 14063*

EUPHORBIACEAE

Acalypha grandis Benth.; *T 14303*
Acalypha hellwigii Warburg cf. var. *mollis* (Warburg) K. Schum. & Laut; *T 14288*
Actephila lindleyi (Steud.) Airy Shaw; *T 13668*
Aporosa (probably) *papuana* Pax & Hoffm.; *T 13890*
Breynia cernua (Poir.) Muell. Arg.; *T 13614, 13723, 14048*
Bridelia macrocarpa Airy Shaw; *K.J. White in NGF 10280*, det. J.R. Croft
Cleistanthus sp., aff. ?*papuanus* (Laut.) Jabl.; *T 13672*
Codiaeum variegatum (L.) Blume var. *moluccanum* (Decne) Muell. Arg.; *T 13746, 14300*
Codiaeum sp.; *T 13742, 14035*, det. K. Damas
Drypetes longifolia (Blume) Pax & Hoffm.; *K.J. White in NGF 10313A*
Endospermum moluccanum (Teijsm. & Binn.) Kurz; *T 13863, 13980*

Euphorbia heterophylla L.; *T 14089*
Euphorbia hirta L.; *T 13798*
Euphorbia plumerioides Teijsm. ex Hassk. var. *acuminata* J.J. Sm.; *T 14139*
Fahrenheitia sp. ?nov.; *T 13689*
Glochidion chondrocarpum Airy Shaw, or aff.; *T 13691*
Glochidion granulare Airy Shaw; *T 13557, 13734, 13966*
Glochidion lobocarpum (Benth.) Bailey; *T&S 13092-B*
Glochidion novoguineense K. Schum.; *T 14125, 14155*
Glochidion (close to) *perakense* Hooker f. var. *supra-axillare* (Benth.) Airy Shaw, '*lanceilimbum-perakense* complex' (cf. Airy Shaw 1975: 125, 1980: 106–107); *T 14073*
Macaranga aleuritoides F.v.M.; *T 14160-B*
Macaranga fallacina Pax & Hoffm.; *T 13541*
Macaranga polyadenia Pax & Hoffm.; *K.J. White in NGF 10314*, this staminate specimen may be conspecific with *T 14105, M. subpeltata*
Macaranga quadriglandulosa Warburg var. *quadriglandulosa*; *T 13960, 14062*
Macaranga subpeltata Laut. & K. Schum.; *T 14105*
Macaranga sp.; *K.J. White in NGF 10260*
Manihot esculenta Crantz; *T 13785*
Melanolepis multiglandulosa (Reinw. ex Blume) Reichb f. & Zoll.; *T 14036*
Omalanthus novoguineensis (Warburg) K. Schum.; *T 13956, 14071*
Omphalea queenslandiae F.M. Bailey; *T 13572, 14136*
Phyllanthus rubriflorus J.J. Sm.; *T 13688, 13752*
Phyllanthus urinaria L.; *T 14237*
Pimelodendron amboinicum Hassk.; *T 13923*
Ricinus communis L.; *T 14022*

EUPOMATIACEAE

Eupomatia laurina R. Br.; SR, occasional in foothill forest

FABACEAE

Abrus pulchellus Thwaites ssp. *pulchellus*; *T 13724*
Calopogonium mucunoides Desv.; *T 13799*
Centrosema pubescens Benth.; *T 13805, 13814*
Crotalaria pallida Aiton; *T 13775, 14015, 14140*
Crotalaria retusa L.; *T 14149*
Derris koolgibberah F.M. Bailey ssp. *koolgibberah*; *T 14221*
Desmodium ormocarpoides DC.; *T&S 13090, T 14296*
Desmodium umbellatum (L.) DC.; *T 14129*
Flemingia macrophylla (Willd.) Merr.; *T 14132*
Flemingia strobilifera (L.) R. Br. ex Aiton f.; *T 14265*
Inocarpus fagifer (Parkinson) Fosb.; *T 13560, 13914, K.J. White in NGF 10284*, det. P. van Royen
Inocarpus sp. ?nov., '*rubidus*' morphotype fide Verdcourt (1979: 304–305); *T 13823, 14210*
Mucuna cyanosperma K. Schum.; *T 13829*
Mucuna novoguineensis Scheffer; *T 14174*
Phaseolus lunatus L.; *T 14257*
Phylacium bracteosum Benn.; *T 13909*
Pterocarpus indicus Willd.; SR, frequent sightings throughout area
Pueraria phaseoloides (Roxb.) Benth. var. *javanica* (Benth.) Baker; *T 14069*
Pueraria phaseoloides (Roxb.) Benth. var. *phaseoloides*; *T 14243*
Pueraria pulcherrima (Koorders) Koorders-Schumacher; *T&S 13072, T 13838*

FLACOURTIACEAE

Casearia erythrocarpa Sleumer; *T 13481*
Casearia macrantha Gilg, or aff.; *T 13517, 13619*
Casearia sp. ?nov.; *T 14150, 14173*
Erythrospermum candidum (Becc.) Becc.; *T&S 13060, T 13495*, also *K.J. White in NGF 10229* and *10326*
Flacourtia inermis Roxb.; *T 13502, 14176*
Homalium foetidum (Roxb.) Benth.; SR, alluvial forest, flowers present on *T 13940*
Osmelia philippina (Turcz.) Benth.; *T 13922, 14046, 14090*, also *K.J. White in NGF 10281*
Pangium edule Reinw.; *T 13646*

GENTIANACEAE

Cotylanthera tenuis Blume; *T 13524, 13911*

GESNERIACEAE

Cyrtandra bracteata Warburg; *T 13989*
Cyrtandra sp., section *Centrosiphon*; *T 13731, 13834, 13888, 13901, 13958, 14230*
Cyrtandra sp., between sections *Centrosiphon* and *Loxanthe*; *T 13433, 14177*
Rhynchoglossum papuae Schltr.; *T 13613, 14148*

HERNANDIACEAE

Hernandia ovigera L.; SR, Guam R., fruits and leaves on ground near Camps 2 & 3

ICACINACEAE

Medusanthera laxiflora (Miers) Howard; *T 13588, 14199*
Polyporandra scandens Becc.; *T 14276*, cf. *Pullen 1064*
Pseudobotrys cauliflora (Pulle) Sleumer; *K.J. White in NGF 10298*, det. J. Womersley
Pseudobotrys dorae Moeser; *T&S 13055, T 13945*
Rhyticaryum longifolium K. Schum. & Laut.; *T 13537*
Rhyticaryum novoguineense (Warburg) Sleumer; *T 13947, 14192*

LAMIACEAE
Faradaya splendida F.v.M.; *T 14054*
Hyptis capitata Jacq.; *T 13663, 13774*
Ocimum gratissimum L.; *T 13813*

LAURACEAE
Actinodaphne sp., (possibly) *nitida* Teschner; SR, foothill forest
Alseodaphne archboldiana (Allen) Kosterm.; *J.C. Saunders 946*
Cryptocarya laevigata Blume; *T 13486, 13599, 13753, 14187*
Cryptocarya massoy (Oken) Kosterm.; SR, Wagadab transect
Cryptocarya multinervis Teschner; *T 14282*
Cryptocarya weinlandii K. Schum.; *K.J. White in NGF 10243, 10306*, dets. A. Kostermans
Endiandra grandiflora Teschner; *K.J. White in NGF 10269*, det. A. Kostermans
Endiandra magnilimba Kosterm.; *T 14114, K.J. White in NGF 10270* (type), *10293*, det. A. Kostermans
Endiandra squarrosa Kosterm.; *K.J. White in NGF 10252, 10307*, also *R. G. Robbins 1625*
Litsea sp., '*L. calophyllantha* K. Schum. facies'; SR, foothill forest
genus indet.; *T 13763*

LEEACEAE
Leea (closer to) *coryphantha* Laut., '*coryphantha-heterodoxa* group' (cf. Ridsdale 1974: 78–79); *T 13581, 13624, 13982*
Leea heterodoxa K. Schum. & Laut.; *T 13446, 13452*
Leea indica (Burm. f.) Merr.; *T 13421, 13959*
Leea zippeliana Miq.; *T 14032, 14201*

LOGANIACEAE
Fagraea ceilanica Thunb.; *T 13673*
Fagraea elliptica Roxb.; SR, foothill forest around Camp 1
Fagraea racemosa Jack ex Wall.; SR, alluvial forests along Guam R.
Geniostoma rupestre J.R. & G. Forst. (closest to) var. *rupestre*; *T 13484, 13538, 13593*
Neuburgia corynocarpa (A. Gray) Leenh. var. *corynocarpa*; *T 13866*, also *K.J. White in NGF 10299*, det. B. Conn
Neuburgia rumphiana Leenh.; *T 13696, 14029*

LORANTHACEAE
Amyema seemeniana (K. Schum.) Danser ssp. *seemeniana*; *T 14260*
Decaisnina hollrungii (K. Schum.) Barlow; SR, hill forest
Dendrophthoe curvata (Blume) Miq.; SR, near Roumirap

LYTHRACEAE
Lagerstroemia cf. *piriformis* Koehne; *T&S 13100*

MAGNOLIACEAE
Elmerrillia tsiampaca (L.) Dandy ssp. *tsiampaca* var. *tsiampaca*; SR, foothill forest

MALVACEAE
Hibiscus archboldianus Borss.; SR, from lepidote fragments on ground, foothill forest
Hibiscus ellipticifolius Borss.; *T 13509*
Hibiscus tiliaceus L.; SR, transect at Wagadab
Sida rhombifolia L. ssp. *rhombifolia*; *T 14014*
Thespesia fissicalyx Borss.; *T 13739*, also *K.J. White in NGF 10297*, det. P. Fryxell

MELASTOMATACEAE
Medinilla musofo Laut. & K. Schum.; *T 14108*
Medinilla triplinervia Cogn., '*musofo-triplinervia* group' (cf. Mansfeld 1925: 116); *T 13418, 14228*
Medinilla sp., aff. *tenuipedicellata* Baker f.; *T 13566, 13617, 13867*
Memecylon schraderbergense Mansf.; *T&S 13052*
Memecylon sp., aff. ?*papuanum* Merr. & Perry, '*excelsum-floribundum* group' (cf. Merrill Perry 1943: 439); *T&S 13052*
Otanthera bracteata Korth.; *T 13968, 14271*

MELIACEAE
Aglaia agglomerata Merr. & Perry, small fruited form; *T 13685*
Aglaia argentea Blume; *T&S 13071*
Aglaia cuspidata C. DC.; *T 13918*, also *K.J. White in NGF 10248*
Aglaia lepidopetala Harms; *T 13470, 13584, 13694, 14100*
Aglaia cf. *lepiorrhachis* Harms; *T 13976*
Aglaia sapindina (F.v.M.) Harms; *T&S 13092-A, T 13687*
Aglaia saxonii Takeuchi; *T 13462, 13712, 13765*
Aglaia sp., aff. *agglomerata* Merr. & Perry; *T 13833, 14102*
Aglaia sp.; *T&S 13113*
Aphanamixis polystachya (Wall.) R.N. Parker; *T&S 13110, T 13501, 13582, 13736*
Chisocheton ceramicus (Miq.) C. DC.; *K.J. White in NGF 10253*, det. D. Mabberley
Chisocheton lasiocarpus (Miq.) Valeton; *T&S 13112*
Chisocheton pohlianus Harms; *T 13424, 13474, 13482, 13485, 13999*
Dysoxylum brassii Merr. & Perry; *T 13715*
Dysoxylum excelsum Blume; *T 14301*
Dysoxylum latifolium Benth.; *T 14098*
Dysoxylum pettigrewianum F.M. Bailey; *T 13601, 13784, 14220*, also *K.J. White in NGF 10320*, det. D. Mabberley

Dysoxylum sparsiflorum Mabberley; *T 13556, 13806, 13827, 14056, 14247*
Dysoxylum variabile Harms; *T 14298*
Dysoxylum sp.; *T 14306*

MENISPERMACEAE

Arcangelisia flava (L.) Merr.; *T 13761*
Chlaenandra ovata Miq.; *T 13519, 13777*
Parabaena tuberculata Becc.; *T 14027*
Pycnarrhena sp., *'novoguineensis-tumefacta* group' (cf. Forman 1986: 173); *T 14019*
Tinomiscium petiolare Hooker f. & Thoms.; *T 14047*

MIMOSACEAE

Archidendron aruense (Warburg) de Wit; *T 13526, 13603, 14021, 14191*, also *K.J. White in NGF 10286*
Archidendron cf. *aruense* (Warburg) de Wit; *T&S 13066*
Archidendron bellum Harms; *T 13707*
Archidendron lucyi F.v.M.; *T 14028*
Entada phaseoloides (L.) Merr.; *T 13607*
Leucaena leucocephala (Lamk) de Wit; *T 14143*
Mimosa diplotricha C. Wright ex Sauvalle var. *diplotricha*; SR, Guam R.
Mimosa pudica L.; SR, Guam R.
Paraserianthes falcataria (L.) Nielsen, closest to ssp. *falcataria*; *T 13737*

MONIMIACEAE

Steganthera dentata (Valeton) Kaneh. & Hatus.; *T 13934, 13939*
Steganthera hirsuta (Warburg) Perkins; *T 13670*
Steganthera hospitans (Becc.) Kaneh. & Hatus.; *T&S 13095, T 13822*

MORACEAE

Antiaropsis decipiens K. Schum.; *T&S 13099, T 13550*
Artocarpus communis J.R. & G. Forst.; *T 13848, 14160-A*
Artocarpus vriesianus Miq. var. *refractus* (Becc.) Jarrett; *T 14006*
Ficus ampelas Burm. f.; *T 13727*
Ficus arbuscula Laut. & K. Schum.; SR, Guam R.
Ficus bernaysii King; *T 13713, 14219*
Ficus botryocarpa Miq. var. *subalbidoramea* (Elmer) Corner; *T 13634, 14225*
Ficus comitis King; *T 13993*
Ficus congesta Roxb.; *T 13600, 14164*
Ficus conocephalifolia Ridl.; *T 13597*
Ficus copiosa Steud.; *T 14043*
Ficus crassiramea Miq. var. *patellifera* (Warburg) Corner; *T 14212*
Ficus dammaropsis Diels var. *obtusa* Corner; *T 13913*
Ficus erythrosperma Miq.; *T 13108*
Ficus gul Laut. & K. Schum.; *T 14134*
Ficus hesperidiiformis King; *T 13979, 14278*
Ficus hystricicarpa Warburg; *T 13520, 13792*
Ficus mollior Benth.; *T 13925*
Ficus odoardi King; *T 13714, 13916*
Ficus pachyrrachis Laut. & K. Schum.; *K.J. White in NGF 10308*, det. E. Corner
Ficus pachyrrachis Laut. & K. Schum. var. *pachyrrachis*; *T 14092*
Ficus phaeosyce Laut. & K. Schum.; *T 13967, 13971*
Ficus polyantha Warburg; *T&S 13103, T 14161*
Ficus primaria Corner; *K.J. White in NGF 10274*, det. E. Corner
Ficus primaria Corner, or aff.; *T 14162*
Ficus pungens Reinw. ex Blume; *T 13880, 14116*
Ficus subcuneata Miq.; *T&S 13107, T 14189*
Ficus subulata Blume; *T 13818, 13995, 14266*, also *K.J. White in NGF 10273*, det. E. Corner
Ficus wassa Roxb.; *T 13549, 13760*
Ficus sp. A, does not key; *T 14020*
Ficus sp. B; *T 14194*
Parartocarpus venenosus (Zoll. & Mor.) Becc. ssp. *papuanus* (Becc.) Jarrett; *T 14059*
Prainea papuana Becc.; *K.J. White in NGF 10230*, det. by K.J. White

MYRISTICACEAE

Endocomia macrocoma (Miq.) de Wilde ssp. *prainii* (King) de Wilde; *T 14112*
Gymnacranthera farquhariana (Hooker f. & Thoms.) Warburg var. *zippeliana* (Miq.) R. Schouten; SR, Wagadab transect in hill forest
Horsfieldia basifissa de Wilde; *T 13762*, also *K.J. White in NGF 10242* (type)
Horsfieldia hellwigii (Warburg) Warburg; *T&S 13065* (sterile)
Horsfieldia hellwigii (Warburg) Warburg var. *brachycarpa* de Wilde; *K.J. White in NGF 10258*
Horsfieldia laevigata (Blume) Warburg cf. var. *novobritannica* (J. Sincl.) de Wilde; *K.J. White in NGF 10263*
Horsfieldia cf. *pulverulenta* Warburg; *T&S 13101* (sterile)
Horsfieldia sepikensis Markgraf; *K.J. White in NGF 10237*, fide de Wilde's (1985: 81) synonymy
Horsfieldia subtilis (Miq.) Warburg; *T 13787, 14050*
Horsfieldia subtilis (Miq.) Warburg var. *subtilis*; *T 13432, 13445, 13508, 14183*
Horsfieldia sylvestris (Houtt.) Warburg; *K.J. White in NGF 10262*, det. J. Sinclair
Myristica buchneriana Warburg; *T&S 13078, T 14295*, also *K.J. White in NGF 10259*
Myristica cylindrocarpa J. Sincl.; *K.J. White in NGF 10288*, det. J. Sinclair, conf. D. Foreman
Myristica fissiflora de Wilde ssp. *fissiflora*; *T 13986, 14037, 14184*

Myristica lancifolia Poir. ssp. *lancifolia*; *T 13497, 13637, 13824*, also *K.J. White in NGF 10235, 10265*
Myristica subalulata Miq. var. *subalulata*; *T 13644*, also *K.J. White in NGF 10251*
Myristica tristis Warburg, or aff.; *T 13487, 13770*

MYRSINACEAE
Ardisia imperialis K. Schum.; *T 13461*
Conandrium polyanthum (Laut. & K. Schum.) Mez; *T&S 13106*
Maesa rufo-villosa Mez; *T&S 13091, T 14198*

MYRTACEAE
Decaspermum bracteatum (Roxb.) A.J. Scott var. *bracteatum*; *T 13819*
Decaspermum neurophyllum Laut. & K. Schum.; *T&S 13087*
Octamyrtus behrmannii Diels; *T 14119*
Syzygium aeoranthum (Diels) Merr. & Perry; *T 13666, 13858*
Syzygium cf. *amplum* Hartley & Perry; *T 13430, 14226*
Syzygium buettnerianum (K. Schum.) Niedenzu; SR, Camp 3
Syzygium coalitum (Greves) Hartley & Perry; *T 14142*
Syzygium hylophilum (Laut. & K. Schum.) Merr. & Perry, or aff.; *T 13564*, also *Pullen 1094* as cf. *hylophilum*, det. T.G. Hartley
Syzygium longipes Merr. & Perry; *T 13875*
Syzygium madangense Hartley & Perry; *K.J. White in NGF 10300* (type)
Syzygium nutans (K. Schum.) Merr. & Perry; *T 13661, 14003*
Syzygium pteropodum (Laut. & K. Schum.) Merr. & Perry; *T 13855*, also *K.J. White in NGF 10264*, det. T.G. Hartley
Syzygium trachyanthum (Diels) Merr. & Perry; *T 13680*
Syzygium trivene (Ridl.) Merr. & Perry; *T 14110*
Syzygium versteegii (Laut.) Merr. & Perry; *K.J. White in NGF 10245*, det. T.G. Hartley
Syzygium sp., aff. *goniopterum* (Diels) Merr. & Perry; *T 13459*
Syzygium sp. nov., aff. *megistophyllum* Merr. & Perry; *T&S 13068*
Syzygium sp.; *T 13437, 14214*, probably conspecific
Syzygium sp.; *K.J. White in NGF 10239*, cited in herbarium log but not found at LAE

NYCTAGINACEAE
Pisonia longirostris Teijsm. & Binn.; *T 13561, 13563, 13837, 14040*
Pisonia müelleriana Warburg; *T 13667*
Pisonia umbellifera (J.R. Forst.) Seemann; *Pullen 1063*, det. D. Frodin

OCHNACEAE
Schuurmansia henningsii K. Schum.; SR, occasional throughout area

OLACACEAE
Anacolosa cf. papuana Schellenb., *T 13868*, det. K. Damas

OLEACEAE
Chionanthus ramiflorus Roxb.; *T 14308*

ONAGRACEAE
Ludwigia octovalvis (Jacq.) Raven; *T 14025*

OPILIACEAE
Opilia amentacea Roxb.; *T 13735*

OXALIDACEAE
Averrhoa bilimbi L.; *T 13547, 13931*

PASSIFLORACEAE
Adenia heterophylla (Blume) Koorders; SR, near Wagadab
Passiflora foetida L.; *T 13961*

PIPERACEAE
Piper aduncum L.; SR, Guam R. and foothill forest
Piper betle L.; SR, cultivated
Piper caninum Blume; *T 13820, 14120*
Piper cf. *caninum* Blume; *T 13810*
Piper celtidiforme Opiz; *T 14030, 14058, 14292*
Piper decumanum (Rumph.) L.; *T 13575, 13942, 14196*
Piper macropiper Pennant; *T 14016*
Piper (probably) *macropiper* Pennant; *T 14122*
Piper majusculum Blume; *T 13704, 13965*
Piper mestonii F.M. Bailey; *T 13801*
Piper plagiophyllum K. Schum. & Laut.; *T 13610*
Piper pseudoamboinense C. DC.; *T 13552, 14024*
Piper cf. *pseudoamboinense* C. DC.; *T 14084*
Piper pullibaccum Trelease; *T 13677, 13970, 14166*
Piper versteegii C. DC.; SR, Guam R.

PITTOSPORACEAE
Pittosporum ferrugineum Aiton f. ssp. *laxiflorum* Schodde; *T 14294*
Pittosporum sinuatum Blume; *K.J. White in NGF 10238*, det. R. Schodde
Pittosporum sinuatum Blume var. *sinuatum*; *T 13441, 13471*

POLYGALACEAE
Eriandra fragrans van Royen & Steen.; *T 13455*, det. K. Damas
Xanthophyllum papuanum Whitm. ex Meijden; *T 14154*, also *K.J. White in NGF 10292*, det. T.C. Whitmore

PROTEACEAE
Finschia chloroxantha Diels var. *macrocarpa*

Sleumer; *K.J. White in NGF 10322*, det. K.J. White
Helicia affinis Sleumer; *T 13602, 13997*

RHAMNACEAE

Alphitonia excelsa (Fenzl) Reiss. ex Endl., sensu Schirarend (1995: 308–311); SR, common in regrowth
Gouania cf. *javanica* Miq.; *T 13721*
Ziziphus angustifolius (Miq.) Hatus.; SR, infrequent in hill forest
Ziziphus djamuensis Laut.; *T 13938*

RHIZOPHORACEAE

Gynotroches axillaris Blume; SR, throughout area

ROSACEAE

Prunus dolichobotrys (K. Schum. & Laut.) Kalkman; *T 14232*
Rubus moluccanus L. var. *discolor* (Blume) Kalkman; *T 13842, 14111*

RUBIACEAE

Airosperma psychotrioides Laut. & K. Schum.; *T 13449, 13504, 13969*
Amaracarpus grandifolius Valeton, or aff.; *T&S 13082, T 13551, 13586*
Amaracarpus sp., aff. '*attenuatus-heteropus* group', but not those species, cf. Merrill and Perry's (1946: 221) group 1; *T 13456*
Amaracarpus sp., aff. *longifolius* Valeton; *T 13479, 13682, 13932*
Amaracarpus sp., Merrill and Perry's (1946: 221) group 2; *T 14273, 14277*
?Amaracarpus spp.; *T 13767, 13929*
Calycosia mamosei Takeuchi; *T 13404, 13877, 14215*
Canthium sp.; *T 13438, 13744*, also *K.J. White in NGF 10249*, det. C. Ridsdale
Hedyotis sp., cf. *H. auricularia* L., or *H. lapeyrousii* DC.; *T 13415, 13620*
Hydnophytum radicans Becc.; *T 14005, 14283*
Ixora sp., section *Hypsophyllum*; *T 13728, 13972*
Lasianthus chlorocarpus K. Schum.; *T 13480, 14185*
Mastixiodendron pachyclados (K. Schum.) Melch. var. *pachyclados*; *T 14248*, also *K.J. White in NGF 10305*, det. S. Darwin
Morinda bracteata Roxb.; *K.J. White in NGF 10232*
Morinda umbellata L. var. *papuana* Valeton; *T 13789, 13921*
Mussaenda cylindrocarpa Burck; *T 13627, 13706, 13817*
Mussaenda scratchleyi Wernh.; SR, Guam R.
Mycetia javanica (Blume) Reinw. ex Korth.; *T 13444, 13616*
Nauclea orientalis L.; SR, Guam R.
cf. *Neonauclea* sp.; *K.J. White in NGF 10243*
Porterandia sp.; *T 14133*, also *K.J. White in NGF 10311*
Psychotria amplithyrsa Valeton; *T 13411, 14076*
Psychotria dipteropoda Laut. & K. Schum.; *T 13831, 13869, 14045, 14200*
Psychotria leptothyrsa Miq. var. *leptothyrsa*; *T&S 13062, T 13476, 14158*
Psychotria mayana Takeuchi; *T 13585, 13940, 13944*
Psychotria membranifolia Bartl. ex DC.; *T 13521, 13553, 13747*
Psychotria micralabastra (Laut. & K. Schum.) Valeton; *T&S 13098, T 13776*
Psychotria micrococca (Laut. & K. Schum.) Valeton; *T&S 13088*
Psychotria olivacea Valeton; SR, foothill forest
Psychotria phaeochlamys (Laut. & K. Schum.) Valeton; *T 13625, 13631, 13781, 13937*
Psychotria sp., aff. *micralabastra* (Laut. & K. Schum.) Valeton; *T 13629, 13920, 14085*
Psychotria sp. nov.; *T 13514*
Psychotria sp. (vining, possibly nov.); *T 13451, 13756*
'*Randia*' sp., '*decora* Val., or *sphaerocarpa* K. Schum. facies', the genus is now recognized only for the neotropics (cf. Puff & Wong: 1993: 29); *T 13516*
'*Randia*' sp., cf. or aff. *schumanniana* Merr. & Perry (*R. speciosa* K. Schum.); *K.J. White in NGF 10236, 10302*, dets. C. Ridsdale
Saprosma subrepandum (K. Schum. & Laut.) Valeton; *T 13930, 14169*
Spermacoce assurgens Ruiz & Pavon.; *T 14153*
Tarenna gülcheriana (K. Schum.) Valeton; *T 13483, 13749, 13788, 13864*
Timonius timon (Spreng.) Merr. var. *timon*; *T 14115*
Timonius sp., aff. *densiflorus* Valeton; *T 14270*
Trukia sp., aff. *dryadum* (S. Moore) Fosb.; *T&S 13089*
Uncaria bernaysii F.v.M.; *T 14249*
Uncaria lanosa Wall.; *T 14127*
Urophyllum sp.; *T 14167*
Versteegia cauliflora (K. Schum. & Laut.) Valeton; *T&S 13061, T 13460, 13949*
Versteegia grandifolia Valeton; *T 13405*

RUTACEAE

Euodia hortensis J.R. & G. Forst.; *T 13608*, also *K.J. White in NGF 10278, 10279*
Lunasia amara Blanco var. *amara*; *T&S 13069, T 13448*
Melicope sp., cf. *M. burttiana* Stone or *M. grandifolia* B.L. Burtt; *T 13936*
Micromelum minutum (Forst. f.) Wight & Walker-Arnott; *T 13811*

Wenzelia dolichophylla (Laut.& K.Schum.) Tanaka; *T 13594, 13623*
Zanthoxylum conspersipunctatum Merr.& Perry; *T 13636*

SABIACEAE
Meliosma pinnata (Roxb.) Maxim. ssp. *macrophylla* (Merr.) Beus.; SR, foothill forest
Sabia pauciflora Blume; *T 13897, 14165*

SANTALACEAE
Scleropyrum aurantiacum (Laut. & K. Schum.) Pilger; *T 14052*

SAPINDACEAE
Allophylus cobbe (L.) Raeuschel; SR, alluvial forest
Arytera sp., aff. *litoralis* Blume, '*litoralis* complex' (cf. Turner 1994:474); *T 13472, 13596*
Cardiospermum halicacabum L.; SR, infrequent in regrowth
Cupaniopsis macropetala Radlk.; *T 13465, 13591*
Dictyoneura obtusa Blume; *T 14227*
Elattostachys obliquinervis Radlk.; *T 13741*
Guioa comesperma Radlk.; *T 14188*
Guioa rigidiuscula Radlk., or '*rigidiuscula* complex' (cf. Welzen 1994: 593); *T 14305*
Harpullia crustacea Radlk.; *T 13681, 14307*
Harpullia ramiflora Radlk.; *T 13759, 13821*
Lepisanthes senegalensis (Poir.) Leenh.; *T 13683, 13699, 13933, 13941*, also *K.J. White in NGF 10247*, det. D. Frodin
Pometia pinnata Forst.; *T 14275*

SAPOTACEAE
Pouteria maclayana (F.v.M.) Baehni; *T 14287*

SCROPHULARIACEAE
Limnophila rugosa (Roth) Merr.; *T 13895*
Lindernia anagallis (Burm. f.) Pennell; *T 13794-A*
Lindernia crustacea (L.) F.v.M.; *T 13794-B, 14151*

SOLANACEAE
Capsicum annuum L. var. *annuum*; SR, cultivated
Nicotiana tabacum L.; SR, cultivated
Physalis minima L.; *T 14238*
Solanum torvum Swartz; *T 13807, 14157*

STERCULIACEAE
Commersonia bartramia (L.) Merr.; *T 14101*
Kleinhovia hospita L.; SR, along Guam R.
Melochia umbellata (Houtt.) Stapf; *T 14293*
Pterocymbium beccarii K. Schum.; *T&S 13097*, also *Pullen 1071* (cited by P. van Royen 1964: 26) but possibly a K.J. White coll., specimen not seen
Sterculia (closest to) *ampla* Baker f.; *T 13768, 14251*
Sterculia edelfeltii F.v.M.; *K.J. White in NGF 10321*, det. P. van Royen
Sterculia schumanniana (Laut.) Mildbr.; *T 13466, 13542, 14096*

STILAGINACEAE
Antidesma katikii Airy Shaw; *T 13729*
Antidesma rhynchophyllum K. Schum.; *T 14033*

THYMELAEACEAE
Phaleria coccinea (Gaud.) F.v.M.; *T 13499, 13503, 13506, 13782, 14137, 14175, 14202, 14231, 14239*

TILIACEAE
Microcos argentata Burrett; *K.J. White in NGF 10234*, det. P. van Royen
Microcos cf. *argentata* Burrett; *K.J. White in NGF 10271*, label reads 'same as *10234*'
Microcos sp. ?nov.; *T 13469, 13562, 13732, 13830, 14104*, also *K.J. White in NGF 10231*
Microcos sp.; *K.J. White in NGF 10231, 10271*, different from previous spp.
Trichospermum tripixis (K. Schum.) Kosterm.; *T 14156*
Triumfetta rhomboidea Jacq.; *T 14091*

ULMACEAE
Celtis latifolia (Blume) Planch.; *T&S 13102, T 13987*

URTICACEAE
cf. *Boehmeria platyphylla* D. Don; *T 14087*
Cypholophus cf. *nummularis* Winkler; *T 14049*
Dendrocnide cf. *corallodesme* (Laut.) Chew; *T 14026*
Dendrocnide cordata (Warburg ex Winkler) Chew; *T 13992*
Dendrocnide nervosa (Winkler) Chew; *T&S 13105*
Dendrocnide schlechteri (Winkler) Chew; *T 14067*
Dendrocnide ternatensis (Miq.) Chew; *T 13803*
Elatostema cf. *beccarii* Schroeter; *T 14055*
Elatostema macrophyllum Brongn.; *T 14274*
Elatostema novoguineense Warburg, or aff.; *T 13676, 13899*
Elatostema sp., aff. *macrophyllum* Brongn.; *T 13414, 14053*
Elatostema sp.; *T 14258*
Laportea decumana (Roxb.) Wedd.; *T 13698*
Leucosyke cf. *capitellata* (Poir.) Chew; *T 13841, 14121*
Nothocnide repanda (Blume) Blume; *T 14013, 14083*
Pipturus argenteus (Forst.f.) Wedd.; *T 13630, 13779, 13812, 13974, 13994*
Pouzolzia cf. *hirta* (Blume) Hassk.; *T 14130, 14267*
Procris sp., aff. *pedunculata* (Forst.) Wedd.; *T 14190*
Villebrunea rubescens (Blume) Blume; *T 14031*

VERBENACEAE

Callicarpa cumingiana (Schauer) Rolfe; *T 13963*
Callicarpa longifolia Lamk; *T 13428*
Clerodendrum porphyrocalyx Laut. & K. Schum.; *T 13425, 13653*
Stachytarpheta cayennensis (Rich.) M. Vahl; *T 13708, 14034*
Teijsmanniodendron bogoriense Koorders; *T&S 13114, K.J. White in NGF 10294*, det. J. Womersley, also in *NGF 10349*
Vitex cofassus Reinw. ex Blume; *T 14086*

VIOLACEAE

Rinorea horneri (Korth.) O.K.; *T&S 13063, T 13554, 13710*

VITACEAE

Cayratia geniculata (Blume) Gagn.; *T 13559*
Cayratia japonica (Thunb.) Gagn.; *T&S 13077, T 14163*
Cissus javana DC.; *K.J. White in NGF 10317*
Tetrastigma lauterbachianum Gilg; *T 13686, 14223*

WINTERACEAE

Zygogynum sp.; *T 14195*

MONOCOTS

AGAVACEAE

Cordyline fruticosa (L.) A. Chev.; *T 13565, 14280*

AMARYLLIDACEAE

Crinum asiaticum L.; *T 13844*
Proiphys amboinensis (L.) Herbert; *T&S 13081, T 14264*

ARACEAE

Aglaonema marantifolium Blume; *T 13534*
Alocasia aequiloba N.E. Br.; *T 13595, 13854, 13892*, also *K.J. White in NGF 10276*, det. A. Hay
Alocasia brancifolia (Schott) A. Hay; *T 13573*, also *K.J. White in NGF 10277*, and *Pullen 1088*, dets. A. Hay
Alocasia cf. *hollrungii* Engl.; *T 13717*
Alocasia lancifolia Engl.; *T 13852, 14097, 14216*
Alocasia lauterbachiana (Engl.) A. Hay; *T 13846, 14113*
Amorphophallus galbra F.M. Bailey; SR, foothill forest
Amorphophallus paeoniifolius (Dennst.) Nicolson; SR, road to Roumirap
Colocasia esculenta (L.) Schott; *T 13640*
Cyrtosperma cuspidispathum Alderw.; *T 13917*, also *K.J. White in NGF 10241*, det. A. Hay
Cyrtosperma cf. *macrotum* Becc. ex Engl.; *T 13705*
Holochlamys beccarii Engl.; *T 13478, 13850, 14218*
Homalomena magna A. Hay; *T 13849*
Homalomena cf. *magna* A. Hay; *T 13402*
Pothos papuanus Becc. ex Engl.; *T 13675*
Pothos rumphii Schott; *T 13580*
Rhaphidophora korthalsii Schott; *T 13879, 14007*
Rhaphidophora versteegii Engl. & Krause; *T 13701*, also *K.J. White in NGF 10290*, det. D. Nicolson
Rhaphidophora sp.; *T 13701*
Schismatoglottis sp. A; *T 13410, 13876, 14103*
Schismatoglottis sp. B; *T 13635*
genus indet.; *K.J. White in NGF 10246*

ARECACEAE

Areca catechu L.; SR, cultivated
Areca macrocalyx Zipp. ex Blume; *T&S 13056, T 13638*
Areca cf. *macrocalyx* Zipp. ex Blume; *T 13464*
Brassiophoenix schumannii (Becc.) Essig; *T 13513*
Calamus hollrungii Becc.; SR, infrequent near expedition Camps 2 and 3
Calamus humboldtianus Becc.; *T 13512-B*
Calamus schlechterianus Becc.; *T 14286*
Calyptrocalyx albertisianus Becc.; *T 13641*
Calyptrocalyx hollrungii Becc.; *T&S 13059, T 13401*
Caryota rumphiana Mart.; SR, throughout project area
Cocos nucifera L.; SR, cultivated
Gulubia costata (Becc.) Becc.; *T 13522*
Hydriastele cf. *microspadix* (Becc.) Burrett; *T 13523*
Korthalsia ?zippelii Blume; SR, Guam R., sterile
Licuala beccariana Furtado; *T 13512-A, 13716*
Licuala cf. *lauterbachii* Dammer & K. Schum.; *T&S 13111*
Metroxylon sagu Rottb.; SR, common in alluvial forest
Orania macropetala Laut. & K. Schum.; *T&S 13057, T 13643*
Ptychococcus sp., '*elatus-paradoxus* group' (cf. Essig 1977: 19); *T 14252*

COMMELINACEAE

Amischotolype mollissima Hassk.; *T 13578, 13826*
Aneilema vitiense Seem.; *T 13885*
Aneilema sp., aff. *?humile* Warburg; *T 13860*
Aneilema sp.; *T 13530, 14082*
Pollia cf. *hasskarlii* Rolla Rao; *T 13408, 13621*
Pollia thyrsiflora (Blume) Steud.; *T 13618*
genus indet., but probably *Floscopa scandens* Lour.; SR, Guam R.

COSTACEAE

Costus speciosus (Koen.) J. Smith; *T 13702, 14095*
Tapeinochilos hollrungii K. Schum.; *T 14009*
Tapeinochilos recurvatum K. Schum.; *T 13700*
Tapeinochilos sp. nov.; *T 13743*

CYPERACEAE

Cyperus diffusus Vahl var. *diffusus*; *T 13870*

Cyperus kyllingia Endl.; *T 13881, 14141*
Fimbristylis dichotoma (L.) Vahl ssp. *dichotoma*; *T 14038*
Mapania macrocephala (Gaud.) K. Schum. ssp. *macrocephala*; *T 13750*, also *Pullen 1095*, det. D. Simpson
Scleria polycarpa Boeck.; *T 13719*, also *Mills s.n.* (March 20, 1961)

DIOSCOREACEAE
Dioscorea esculenta (Lour.) Burk.; SR, cultivated throughout area

DRACAENACEAE
Dracaena angustifolia Roxb.; *T 13555*

FLAGELLARIACEAE
Flagellaria indica L.; SR, Guam River

HELICONIACEAE
Heliconia papuana W.J. Kress; *T&S 13094, T 13400*

HYPOXIDACEAE
Curculigo capitulata (Lour.) Kuntze; *T 13628*

LILIACEAE
Dianella ensifolia (L.) DC.; *T 13442*

MARANTACEAE
Cominsia gigantea (Scheff.) K. Schum.; *T 13579*
Cominsia cf. *minor* Valeton; *T 13845*
Donax cannaeformis (Forst.f.) K. Schum.; *T 13473, 13491*
Phrynium cf. *macrocephalum* K. Schum.; *T 13468, 13496*
Phrynium pedunculatum Warburg, or aff.; *T&S 13053-A, T 13568, 13878, 13988, 14209*
Phrynium sp.; *T 13443, 14197*

MUSACEAE
Musa banksii F.v.M.; *T 13642, 14004*
Musa schizocarpa Simmonds; SR, scattered throughout area

ORCHIDACEAE
(dets. by N.H.S. Howcroft unless otherwise indicated)
Bulbophyllum ?mimiense Schltr. (section *Micromonanthe*); *T 13647*
Bulbophyllum sp.; *T 13647* (mixed coll.)
Corymborkis veratrifolia (Reinw.) Blume; *T 14057, 14077*
Dendrobium macrophyllum A. Rich.; *T 13825*
Dipodium pandanum Bail.; SR, alluvial forest
Grammatophyllum papuanum J.J. Sm.; *T 14291*
Habenaria chloroleuca Schltr.; *T 13525*
Hetaeria oblongifolia Blume, s.l.; *T 13527*, det. L. Juswara
Liparis condylobulbon Reichb f.; *T 13457, 14094*
Nervilia sp.; *K.J. White in NGF 10240*, det. A. Dockrill
Oeceoclades pulchra (Thouars) Cribb & Clements; *T 14075*
Peristylus ?papuana J.J. Sm.; *T 13927*
Pholidota imbricata Hooker; *T 14008*
Plocoglottis cf. *moluccana* Schltr.; *T 13908, 14066*
Spathoglottis plicata Blume ssp. *puberula* N.H.S. Howcroft; *T 13403, 13645*
Tropidia disticha Schltr.; *T 13409, 14168*
Vrydagzynea cf. *rivularis* Schltr.; *T 13886*
Zeuxine polygonoides (F.v.M.) Cribb; *T&S 13051*
genus indet.; *T 13505*

PANDANACEAE
Freycinetia spp.; *T 13407, 13778*, currently under study by K.-L. Huynh
Pandanus angiensis Kaneh., or aff.; *T 13847*
Pandanus cf. *cernuifolius* Merr. & Perry, '*beccarii-cernuifolius* group' (cf. Merr. & Perry 1939: 180); *T 14222*
Pandanus lustrorum Stone, or aff.; *T 14224*

POACEAE
Apluda mutica L.; *T&S 13076*, also *K.J. White in NGF 10303*
Axonopus compressus (Swartz) Beauv.; *T 14145*
Bambusa microcephala (Pilger) Holttum; *T 13558, 13622*
Brachiaria mutica (Forsk.) Stapf; SR, Guam R. bridge
Centotheca latifolia (Osb.) Trin.; *T 13532*
Chrysopogon aciculatus (Retz.) Trin.; SR, Roumirap
Coix lachryma-jobi L.; *T 13808*
Cyrtococcum accrescens (Trin.) Stapf; *T 13896*
Dactyloctenium aegyptium (L.) Beauv.; *T 14023*
Eleusine indica (L.) Gaertn.; *T 14068*
Ichnanthus vicinus (F.M. Bailey) Merr.; *T 14304*
Leptaspis banksii R. Br.; *T 14302*, det. K. Damas
Leptaspis urceolata (Roxb.) R. Br.; *T 13467, 13533*
Oplismenus compositus (L.) P. Beauv.; *T 13955*
Panicum sarmentosum Roxb.; *T 13548*
Pennisetum purpureum Schumach.; *T 13780*
Pogonatherum paniceum (Lamk) Hack.; *T 14152*
Polytoca macrophylla Benth.; *T 13709*
Rottboellia exaltata L.f.; *T 13795*
Saccharum officinarum L.; SR, cultivated
Saccharum robustum Brandes & Jeswiet ex Grassl; SR, thickets along Guam R.
Schizostachyum lima (Blanco) Merr.; *Pullen 1117*, det. R. Holttum
Setaria palmifolia (Koenig) Stapf; *T 13957*
Sorghum nitidum (Vahl) Pers.; *K.J. White in NGF 10304*
Sorghum propinquum (Kunth) Hitchc.; *T&S 13074*
Themeda arguens (L.) Hack.; *T&S 13075*

SMILACACEAE
Smilax cf. *australis* R. Br.; *T 13569*

ZINGIBERACEAE

Curcuma cf. *australasica* Hooker f., '*petiolata* group' (cf. Valeton 1918: 10); *T 13703*
Etlingera dekockii (Valeton) R.M. Smith; *T 13535*
Etlingera sp. ?nov. (series *Polyanthae*); *T 13985*
Hornstedtia scottiana (F.v.M.) K. Schum.; *T 14211*
Pleuranthodium sp., ?*trichocalyx* (Valeton) R.M. Smith; *T 13406, 13463*
Riedelia grandiligula Valeton; *T 13853, 14128, 14213*
Riedelia longifolia Valeton; *T 13771*
Riedelia macrantha K. Schum.; *T 13816*
Riedelia sp.; *T 14269*

APPENDIX 2
THE SCIENTIFIC EQUIVALENTS OF MAIAN (TOKPLES) PLANT NAMES

Traditional names are listed with the corresponding binomials determined from the vouchers. Spellings are phonetic. Several taxa are apparently represented by orthographic variants in the Maian language (cf. compilation following main listing). This situation may be due to the lack of a written grammar for the tokples, and the resulting absence of a medium for its standardization.

Maian Name	Scientific Binomial	Family
ah-maap	*Micromelum minutum* (Forst. f.) Wight & Walker-Arnott	Rutaceae
ah-mo-rap	*Piper* cf. *caninum* Blume	Piperaceae
ah-nah-sahr	*Decaspermum bracteatum* (Roxb.) A.J. Scott var. *bracteatum*	Myrtaceae
ah-rap	*Coix lachryma-jobi* L.	Poaceae
ai-ke-kav	*Erechtites valerianifolia* (Wolf) DC.	Asteraceae
akakarap-nevermbup	*Asplenium subemarginatum* Rosenst.	Aspleniaceae
ambo-dera-namb	*Ziziphus djamuensis* Laut.	Rhamnaceae
ambup	*Dendrocnide ternatensis* (Miq.) Chew	Urticaceae
amora-kamorap	*Piper decumanum* (Rumph.) L.	Piperaceae
amungcurcuri	*Neisosperma citrodorum* (Laut. & K. Schum.) Fosb. & Sach.	Apocynaceae
anganange-woganamb	*Tetracera nordtiana* F.v.M.	Dilleniaceae
angkumamb	*Diospyros papuana* Valeton ex Bakh.	Ebenaceae
ango-leb	*Homalomena magna* A. Hay	Araceae
arab	*Leea heterodoxa* K. Schum. & Laut.	Leeaceae
aramitap	*Steganthera hospitans* (Becc.) Kaneh. & Hatus.	Monimiaceae
arap	*Pimelodendron amboinicum* Hassk.	Euphorbiaceae
arep	*Amaracarpus* sp.	Rubiaceae
aru	*Pisonia longirostris* Teijsm. & Binn.	Nyctaginaceae
atep	*Schismatoglottis* sp.	Araceae
ave-namb	*Steganthera dentata* (Valeton) Kaneh. & Hatus.	Monimiaceae
babagalum	*Amaracarpus grandifolius* Valeton	Rubiaceae
babagalum	*Psychotria mayana* Takeuchi	Rubiaceae
babagalum	*Psychotria phaeochlamys* (Laut. & K. Schum.) Valeton	Rubiaceae
babagalum	*Psychotria* sp., aff. *micralabastra* (Laut. & K. Schum.) Valeton	Rubiaceae
badidir	*Elattostachys obliquinervis* Radlk.	Sapindaceae
bago-bagot	*Dianella ensifolia* (L.) DC.	Liliaceae
bailalum	*Steganthera hirsuta* (Warburg) Perkins	Monimiaceae
bailarum	indet.	Orchidaceae
bal-sivar	*Merremia peltata* (L.) Merr.	Convolvulaceae

baliab	*Bambusa microcephala* (Pilger) Holttum	Poaceae
baratep	*Asplenium nidus* L. var. *nidus*	Aspleniaceae
bee-en	*Centrosema pubescens* Benth.	Fabaceae
bial	*Pipturus argenteus* (Forst. f.) Wedd.	Urticaceae
bimur-nganam	*Intsia bijuga* (Colebr.) Kuntze	Caesalpiniaceae
bo-rap	*Solanum torvum* Swartz	Solanaceae
boa-boak	*Lygodium circinnatum* (Burm. f.) Swartz	Schizaeaceae
boagalum	*Airosperma psychotrioides* Laut. & K. Schum.	Rubiaceae
bodog	*Tetrastigma lauterbachianum* Gilg	Vitaceae
bogang-dap	*Terminalia impediens* Coode	Combretaceae
boge-namb	*Morinda umbellata* L. var. *papuana* Valeton	Rubiaceae
bogo-namb	*Pararistolochia schlechteri* (Laut.) M.J. Parsons	Aristolochiaceae
bon	*Thespesia fissicalyx* Borss.	Malvaceae
buasum	*Codiaeum* sp.	Euphorbiaceae
buburat	*Archidendron bellum* Harms	Mimosaceae
buko-bukop	*Equisetum ramosissimum* Desf. ssp. *debile* (Vauch.) Hauke	Equisetaceae
buku	*Aglaia lepidopetala* Harms	Meliaceae
buku	*Aglaia saxonii* Takeuchi	Meliaceae
buku-wabado	*Aglaia lepidopetala* Harms	Meliaceae
bulubul	*Ficus botryocarpa* Miq. var. *subalbidoramea* (Elmer) Corner	Moraceae
da-da-da-dag	*Garcinia maluensis* Laut.	Clusiaceae
da-da-dag	*Syzygium* sp., aff. *goniopterum* (Diels) Merr. & Perry	Myrtaceae
dago-dagol	*Asplenium* cf. *amboinense* Willd.	Aspleniaceae
dago-dagol	*Lindsaea obtusa* J. Smith	Lindsaea group
dago-dagol	*Liparis condylobulbon* Reichb f.	Orchidaceae
dai-dai-sivar	*Gouania* cf. *javanica* Miq.	Rhamnaceae
dalulup	*Horsfieldia subtilis* (Miq.) Warburg var. *subtilis*	Myristicaceae
dambotan	*Ficus dammaropsis* Diels var. *obtusa* Corner	Moraceae
damu-kwa	*Begonia papuana* Warburg	Begoniaceae
danga-namb	*Terminalia impediens* Coode	Combretaceae
davaru-guar	*Alangium villosum* (Blume) Wangerin	Alangiaceae
daveh-veh	*Rhyticaryum novoguineense* (Warburg) Sleumer	Icacinaceae
dawab	*Garcinia dulcis* (Roxb.) Kurz	Clusiaceae
dawaba-sivar	*Entada phaseoloides* (L.) Merr.	Mimosaceae
dide-lolol	*Abrus pulchellus* Thwaites ssp. *pulchellus*	Fabaceae
diga	*Ficus wassa* Roxb.	Moraceae
dodor	*Archidendron aruense* (Warburg) de Wit	Mimosaceae
duaram	*Dracaena angustifolia* Roxb.	Dracaenaceae
duat-murukun	*Cyrtosperma* cf. *macrotum* Becc. ex Engl.	Araceae
dzam	*Aglaia agglomerata* Merr. & Perry, or aff.	Meliaceae
ese-esea	*Ardisia imperialis* K. Schum.	Myrsinaceae
esg-ese-ya	*Phyllanthus rubriflorus* J.J. Sm.	Euphorbiaceae
eve	*Inocarpus fagifer* (Parkinson) Fosb.	Fabaceae
eve	*Inocarpus* (close to) '*rubidus*' morphotype fide Verdcourt	Fabaceae
ga-tsurup	*Psychotria phaeochlamys* (Laut. & K. Schum.) Valeton	Rubiaceae
gabin	*Alocasia brancifolia* (Schott) A. Hay	Araceae
gaga-bumer	*Plesioneuron tuberculatum* (Cesati) Holttum	Thelypteridaceae
gaga-bumer	*Pteris warburgii* Christ	Pteridaceae
gagab	*Pothos rumphii* Schott	Araceae
gagap	*Rhaphidophora versteegii* Engler & Krause	Araceae

gaira-malapta	*Barringtonia calyptrocalyx* K. Schum. var. *mollis* Laut.	Barringtoniaceae
gawok	*Laportea decumana* (Roxb.) Wedd.	Urticaceae
gemea	*Heliconia papuana* W.J. Kress	Heliconiaceae
gibaiv	*Schismatoglottis* sp.	Araceae
gilagal	*Mapania macrocephala* (Gaud.) K. Schum. ssp. *macrocephala*	Cyperaceae
giliba	*Curculigo capitulata* (Lour.) Kuntze	Hypoxidaceae
giligelum	*Curcuma* cf. *australasica* Hooker f.	Zingiberaceae
giligelum-sivar	*Psychotria* (possibly new vining sp.)	Rubiaceae
go-idi	*Musa banksii* F.v.M.	Musaceae
guragor	*Paraserianthes falcataria* (L.) Nielsen cf. ssp. *falcataria*	Mimosaceae
i-pap	*Dysoxylum sparsiflorum* Mabberley	Meliaceae
ibi-ibim	*Piper mestonii* F.M. Bailey	Piperaceae
idang io	*Ptyssiglottis pubisepala* (Lindau) B. Hansen	Acanthaceae
idi-dir	*Medinilla* sp., aff. *tenuipedicellata* Baker f.	Melastomataceae
idi-muyat	*Versteegia cauliflora* (K. Schum. & Laut.) Valeton	Rubiaceae
ikikap	*Tropidia disticha* Schltr.	Orchidaceae
ivang-glu	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
ivanum	*Phaleria coccinea* (Gaud.) F.v.M.	Thymelaeaceae
kabav	*Leea* cf. *coryphantha* Laut.	Leeaceae
kabav	*Leea indica* (Burm. f.) Merr.	Leeaceae
kadimu	*Donax cannaeformis* (Forst. f.) K. Schum.	Marantaceae
kah-bik	*Syzygium pteropodum* (Laut. & K. Schum.) Merr. & Perry	Myrtaceae
kaiam-mulava	*Hulemacanthus novoguineensis* (Lindau) Bremek.	Acanthaceae
kaka-kalap	*Bolbitis heteroclita* (Presl) Ching	Lomariopsidaceae
kalagid	*Cordyline fruticosa* (L.) A. Chev.	Agavaceae
kalebuang	*Brassiophoenix schumannii* (Becc.) Essig	Arecaceae
kalikal	*Ipomoea congesta* R. Br.	Convolvulaceae
kamasasak	*Phrynium pedunculatum* Warburg, or aff.	Marantaceae
kamasosak	*Phrynium* sp.	Marantaceae
kamora-kamorap	*Piper caninum* Blume	Piperaceae
kaposika	*Macaranga fallacina* Pax & Hoffm.	Euphorbiaceae
kasapa	*Pangium edule* Reinw.	Flacourtiaceae
kasipul	*Schizostachyum lima* (Blanco) Merr.	Poaceae
kasiwar-gili-gilib	*Etlingera dekockii* (Valeton) R.M. Smith	Zingiberaceae
kasiwar-gili-giliba	*Spathoglottis plicata* Blume ssp. *puberula* N.H.S. Howcroft	Orchidaceae
kasuar dadi	*'Randia'* sp., *'decora* Val., or *sphaerocarpa* K. Schum. facies'	Rubiaceae
kasuar-mudu-mado	*Cerbera floribunda* K. Schum.	Apocynaceae
kawari	*Gnetum costatum* K. Schum.	Gnetaceae
keiki	*Amischotolype mollissima* Hassk.	Commelinaceae
keiki	*Costus speciosus* (Koen.) J. Smith	Costaceae
keimang	*Ficus hystricicarpa* Warburg	Moraceae
keiti	*Tapeinochilos recurvatum* K. Schum.	Costaceae
keiti	*Tapeinochilos* sp. nov.	Costaceae
ker-ker-kanamb	*Aneilema vitiense* Seem.	Commelinaceae
ker-ker-kanamb	*Vrydagzynea* cf. *rivularis* Schltr.	Orchidaceae
kibaip	*Homalomena* cf. *magna* A. Hay	Araceae
kibaip	*Schismatoglottis* sp.	Araceae
kibi-kibale	*Ixora* sp., section *Hypsophyllum*	Rubiaceae

kibi-kibale	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
kibi-kibale	*Phaleria coccinea* (Gaud.) F.v.M.	Thymelaeaceae
kidi-kidi	*Pleuranthodium* sp., ?*trichocalyx* (Valeton) R.M. Smith	Zingiberaceae
kivi-kiva	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
kobos-susul	*Myristica subalulata* Miq. var. *subalulata*	Myristicaceae
kobou-susul	*Horsfieldia subtilis* (Miq.) Warburg var. *subtilis*	Myristicaceae
koita	*Casearia erythrocarpa* Sleumer	Flacourtiaceae
koita	*Glochidion granulare* Airy Shaw	Euphorbiaceae
koitav	*Petalolophus* sp., aff. *megalopus* K. Schum.	Annonaceae
kokam-tol	*Sterculia schumanniana* (Laut.) Mildbr.	Sterculiaceae
kolaben	*Calamus humboldtianus* Becc.	Arecaceae
kolaiv	*Holochlamys beccarii* Engl.	Araceae
kolaiv-nganam	*Pseuduvaria* sp., aff. ?*versteegii* (Diels) Merr.	Annonaceae
komekelak	*Sphaerostephanos arfakianus* (Baker) Holttum	Thelypteridaceae
korang-korang	*Aphanamixis polystachya* (Wall.) R.N. Parker	Meliaceae
kututal	*Psychotria amplithyrsa* Valeton	Rubiaceae
kuvu-kuv	*Elatostema novoguineense* Warburg, or aff.	Urticaceae
kwarikioari	*Gnetum gnemonoides* Brongn.	Gnetaceae
lago-lagod	*Asplenium phyllitidus* Don ssp. *malesicum* Holttum	Aspleniaceae
lala-lala	*Cayratia geniculata* (Blume) Gagn.	Vitaceae
lam	*Euphorbia hirta* L.	Euphorbiaceae
lasa-lasa	*Asplenium* cf. *affine* Swartz, '*affine-cuneatum* group'	Aspleniaceae
lasa-lasa	*Bolbitis quoyana* (Gaud.) Ching	Lomariopsidaceae
lasa-lasa	*Lindsaea tenuifolia* Blume	Lindsaea group
lasa-lasa	*Microsorum membranifolium* (R. Br.) Ching	Polypodiaceae
lasa-lasa	*Pleocnemia macrodonta* (Fée) Holttum	Tectaria group
lawa-lawat	*Semecarpus brachystachys* Merr. & Perry	Anacardiaceae
lawa-lawat	*Semecarpus magnificus* K. Schum.	Anacardiaceae
lawalang wiab	*Popowia* sp., aff. *pisocarpa* (Blume) Endl.	Annonaceae
lomal-nganam	*Harpullia crustacea* Radlk.	Sapindaceae
ma-bairap	*Callipteris prolifera* (Lamk) Bory	Athyriaceae
ma-bairap	*Lomagramma* cf. *sinuata* C. Chr.	Lomariopsidaceae
ma-bairap	*Stenochlaena milnei* Underwood	Blechnaceae
ma-kap	*Trichosanthes* sp., '*longiflora-bracteata* group'	Cucurbitaceae
ma-nem-gab	*Holochlamys beccarii* Engl.	Araceae
ma-rab	*Riedelia grandiligula* Valeton	Zingiberaceae
ma-rab	*Riedelia macrantha* K. Schum.	Zingiberaceae
mabarara-dangamb	*Osmelia philippina* (Turcz.) Benth.	Flacourtiaceae
maberu	*Cleistanthus* sp., aff. ?*papuanus* (Laut.) Jabl.	Euphorbiaceae
maberu	*Erythrospermum candidum* (Becc.) Becc.	Flacourtiaceae
maberu	*Rhyticaryum longifolium* K. Schum. & Laut.	Icacinaceae
maboramb	*Ficus odoardi* King	Moraceae
mago-ragor	*Grammatophyllum papuanum* J.J. Sm.	Orchidaceae
mago-ragor	*Pyrrosia princeps* (Mett.) Morton	Polypodiaceae
magule	*Garcinia maluensis* Laut.	Clusiaceae
magule	*Syzygium trachyanthum* (Diels) Merr. & Perry	Myrtaceae
mamba-mambap	*Osmoxylon sessiliflorum* (Laut.) Philipson	Araliaceae
mamba-mambap	*Osmoxylon* (closest to) *sessiliflorum* (Laut.) Philipson	Araliaceae
man-duroop	*Plocoglottis* cf. *moluccana* Schltr.	Orchidaceae
man-gab	*Alocasia lancifolia* Engl.	Araceae
man-trep	*Anacolosa* cf. *papuana* Schellenb.	Olacaceae

manda-peb	*Selaginella* sp., aff. ?*hieronymiana* v.A.v.R.	Selaginellaceae
mandurup	indet.	Orchidaceae
mane-kav	*Areca* cf. *macrocalyx* Zipp. ex Blume	Arecaceae
mane-mane-kav	*Lasianthus chlorocarpus* K. Schum.	Rubiaceae
mane-mane-kav	*Medusanthera laxiflora* (Miers) Howard	Icacinaceae
manekap	*Areca macrocalyx* Zipp. ex Blume	Arecaceae
mang-gap	*Alocasia aequiloba* N.E. Br.	Araceae
mang-gap	*Alocasia lauterbachiana* (Engl.) A. Hay	Araceae
mansu-borobor	*Syzygium aeoranthum* (Diels) Merr. & Perry	Myrtaceae
mansu-borobor	*Syzygium longipes* Merr. & Perry	Myrtaceae
mara-marav	*Piper pseudoamboinense* C. DC.	Piperaceae
mara-marav	*Piper pullibaccum* Trelease	Piperaceae
marap	*Steganthera dentata* (Valeton) Kaneh. & Hatus.	Monimiaceae
mariap-tobitobi	*Ficus bernaysii* King	Moraceae
mariap-tobitobi	*Ficus conocephalifolia* Ridl.	Moraceae
maruruma	*Wenzelia dolichophylla* (Laut. & K. Schum.) Tanaka	Rutaceae
masa-wun-bandep	*Cyperus diffusus* Vahl var. *diffusus*	Cyperaceae
mavanda-ngamb	*Pseudobotrys dorae* Moeser	Icacinaceae
mekukum	*Hoya pottsii* F.M. Bailey	Asclepiadaceae
migim	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
moimoit	*Scleria polycarpa* Boeck.	Cyperaceae
mondi-minab	*Neuburgia corynocarpa* (A. Gray) Leenh.	Loganiaceae
monia-kiui-kiva	*Averrhoa bilimbi* L.	Oxalidaceae
monia-nasag	*Cryptocarya laevigata* Blume	Lauraceae
mor	*Inocarpus fagifer* (Parkinson) Fosb.	Fabaceae
mora-morava	*Piper majusculum* Blume	Piperaceae
mouko	*Microcos* sp. ?nov.	Tiliaceae
moyab-pooh	*Alocasia aequiloba* N.E. Br.	Araceae
mua-muadi	*Cominsia gigantea* (Scheffer) K. Schum.	Marantaceae
mua-muadi	*Phrynium* cf. *macrocephalum* K. Schum.	Marantaceae
mua-muadi	*Phrynium* sp., aff. *macrocephalum* K. Schum.	Marantaceae
muania-kivikiva	*Alocasia* cf. *hollrungii* Engl.	Araceae
muara-muarav	*Piper decumanum* (Rumph.) L.	Piperaceae
muat-upot-ugarum	*Hedyotis* sp., cf. *H. auricularia* L., or *H. lapeyrousii* DC.	Rubiaceae
muat-upot-ugarum	*Justicia* sp.	Acanthaceae
mugum	*Gastonia spectabilis* (Harms) Philipson	Araliaceae
muiyam	*Melodinus* cf. *acutus* (Markgraf) Markgraf	Apocynaceae
mum-nganam	*Mussaenda cylindrocarpa* Burck	Rubiaceae
mumbutakut	*Psychotria dipteropoda* Laut. & K. Schum.	Rubiaceae
muonia-kivikiva	*Graptophyllum pictum* (L.) Griff.	Acanthaceae
musus	*Ageratum conyzoides* L.	Asteraceae
mutu-ngomb	*Ficus mollior* Benth.	Moraceae
nanggu-nanggu-nam	*Strobilanthes* s.l., *Hemigraphis primulifolia* (Nees) F. Vill. facies	Acanthaceae
nasag	*Amaracarpus grandifolius* Valeton	Rubiaceae
nasag muani	*Lunasia amara* Blanco var. *amara*	Rutaceae
navyia	*Syzygium* cf. *amplum* Hartley & Perry	Myrtaceae
navyia	*Syzygium* sp.	Myrtaceae
ngabu-kuruk	*Zanthoxylum conspersipunctatum* Merr. & Perry	Rutaceae
ngabu-ngabu	*Psychotria leptothyrsa* Miq. var. *leptothyrsa*	Rubiaceae
nganam idir idir	*Medinilla triplinervia* Cogn., '*mufoso-triplinervia* group'	Melastomataceae
ngapar-nganam	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
ngaparu-pot	*Sphaerostephanos pilososquamatus* (v.A.v.R.) Holttum	Thelypteridaceae

ngaun-nasag	*Aglaia sapindina* (F.v.M.) Harms	Meliaceae
ngavisi	*Helicia affinis* Sleumer	Proteaceae
ngawar-dodol	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
ngayom-nasag	*Psychotria membranifolia* Bartl. ex DC.	Rubiaceae
ngayom-nasag	*Psychotria* cf. *membranifolia* Bartl. ex DC.	Rubiaceae
ngoku	*Ficus odoardi* King	Moraceae
ngumusinam	*Pueraria pulcherrima* (Koorders) Koorders-Schumacher	Fabaceae
ninara-naumu	*Casearia macrantha* Gilg, or aff.	Flacourtiaceae
ninara-umu	*Rinorea horneri* (Korth.) O.K.	Violaceae
ooh-rau-rap	*Rhaphidophora korthalsii* Schott	Araceae
oro-momb	*Achyranthes bidentata* Blume	Amaranthaceae
osag-rep	*Psychotria dipteropoda* Laut. & K. Schum.	Rubiaceae
padada	*Syzygium hylophilum* (Laut. & K. Schum.) Merr. & Perry	Myrtaceae
pah-tooey	*Mussaenda cylindrocarpa* Burck	Rubiaceae
pake-koal	*Ficus congesta* Roxb.	Moraceae
pale-palel	*Codiaeum variegatum* (L.) Blume	Euphorbiaceae
palisar	*Dysoxylum sparsiflorum* Mabberley	Meliaceae
pat dagol dagol	*Pronephrium micropinnatum* Holttum	Thelypteridaceae
pat dumudumar	*Eriandra fragrans* van Royen & Steen.	Polygalaceae
pat-sani-sani	*Ruellia* sp. (*Leptosiphonium*)	Acanthaceae
puale-pualel	*Mackinlaya celebica* (Harms) Philipson	Araliaceae
pupun-lov	*Selaginella* cf. *velutina* Cesati	Selaginellaceae
quasi-kwas	*Ocimum gratissimum* L.	Lamiaceae
rasapakay	*Harpullia ramiflora* Radlk.	Sapindaceae
rubu-gem-nasag	*Cryptocarya laevigata* Blume	Lauraceae
rubu-rubu	*Begonia papuana* Warburg	Begoniaceae
rubu-rubu	*Begonia* cf. *papuana* Warburg	Begoniaceae
rubu-rubu	*Begonia pseudolateralis* Warburg	Begoniaceae
rubu-rubu	*Calycosia mamosei* Takeuchi	Rubiaceae
rubu-rubu	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
rubu-rubu	*Elatostema* sp., aff. *macrophyllum* Brongn.	Urticaceae
sa-kamb	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
sagag-gosmun	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sagag-mum	*Colocasia esculenta* (L.) Schott	Araceae
sagag-u-goga-umun	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sagag-ugosum	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sagua	*Myristica lancifolia* Poir. ssp. *lancifolia*	Myristicaceae
sagua	*Myristica tristis* Warburg, or aff.	Myristicaceae
sakamb	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
sakamb	*Dicliptera papuana* Warburg	Acanthaceae
sakas-sakamb	*Eclipta prostrata* (L.) L.	Asteraceae
sakomb	indet.	indet.
samangi manggib	*Tabernaemontana orientalis* R. Br.	Apocynaceae
sana ngamb	*Pneumatopteris* sp., aff. *keysseriana* (Rosenst.) Holttum	Thelypteridaceae
sang-guab	*Goniothalamus imbricatus* Scheffer	Annonaceae
sang-guab	*Goniothalamus* cf. *imbricatus* Scheffer	Annonaceae
sang-guab	*Myristica lancifolia* Poir. ssp. *lancifolia*	Myristicaceae
sangu-mutup	*Aceratium ledermannii* Schltr.	Elaeocarpaceae
sauga-sivar	*Opilia amentacea* Roxb.	Opiliaceae
sauiak	*Panicum sarmentosum* Roxb.	Poaceae
say-ri-keep	*Mucuna cyanosperma* K. Schum.	Fabaceae
say-veb	*Aneilema* sp., aff. ?*humile* Warburg	Commelinaceae

se-bip	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
se-vep	*Cyrtococcum accrescens* (Trin.) Stapf	Poaceae
seger	*Aphanamixis polystachya* (Wall.) R.N. Parker	Meliaceae
seger	*Chisocheton pohlianus* Harms	Meliaceae
seger	*Chisocheton* cf. *pohlianus* Harms	Meliaceae
seger-buga	*Calycacanthus magnusianum* K. Schum.	Acanthaceae
seger-buga	*Flacourtia inermis* Roxb.	Flacourtiaceae
seger-buga	*Phyllanthus rubriflorus* J.J. Sm.	Euphorbiaceae
seger-nanam	*Aglaia agglomerata* Merr. & Perry	Meliaceae
seger-nganam	*Fahrenheitia* sp. ?nov.	Euphorbiaceae
sekera-nasag	*Rinorea horneri* (Korth.) O.K.	Violaceae
sepi-sepib	*Averrhoa bilimbi* L.	Oxalidaceae
sesambop	*Pisonia longirostris* Teijsm. & Binn.	Nyctaginaceae
sibi-namb	*Asplenium* cf. *amboinense* Willd.	Aspleniaceae
sigawag	*Polytocha macrophylla* Benth.	Poaceae
sigirpa-nganam	*Aceratium ledermannii* Schltr.	Elaeocarpaceae
singi-singgip	*Cephalomanes atrovirens* Presl	Hymenophyllaceae
singi-singgip	*Lindsaea obtusa* J. Smith	Lindsaea group
singi-singgip	*Lindsaea* cf. *obtusa* J. Smith	Lindsaea group
singi-singgip	*Lindsaea tenuifolia* Blume	Lindsaea group
sivar-viav	*Amaracarpus* sp., aff. '*attenuatus-heteropus* group'	Rubiaceae
sivar-viav	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
sivar-wiav	*Goniothalamus* cf. *imbricatus* Scheffer	Annonaceae
sivar-wiav	*Popowia* sp.	Annonaceae
sivar-wiav	*Pseuduvaria* sp.	Annonaceae
sivar-yadod	*Pseuduvaria* sp.	Annonaceae
sivaru-guaru	*Goniothalamus* sp.	Annonaceae
sivila	*Omphalea queenslandiae* F.M. Bailey	Euphorbiaceae
sob-barewa	*Psychotria* sp. nov.	Rubiaceae
sob-takevam	*Bolbitis* cf. *quoyana* (Gaud.) Ching	Lomariopsidaceae
sopi-sebip	*Phylacium bracteosum* Benn.	Fabaceae
sretu-ngomb	*Neisosperma citrodorum* (Laut. & K. Schum.) Fosb. & Sach.	Apocynaceae
staylki	*Calopogonium mucunoides* Desv.	Fabaceae
sumbu-wadab	*Elatostema novoguineense* Warburg, or aff.	Urticaceae
sumure	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
ta-kup	*Ficus pungens* Reinw. ex Blume	Moraceae
ta-wop	*Cominsia* cf. *minor* Valeton	Marantaceae
tagle	*Antiaropsis decipiens* K. Schum.	Moraceae
tagle	*Ficus ampelas* Burm. f.	Moraceae
tah-bop	*Phrynium pedunculatum* Warburg, or aff.	Marantaceae
tai-namb	*Amaranthus dubius* Thell.	Amaranthaceae
take-takel	*Aglaia saxonii* Takeuchi	Meliaceae
take-takepa	*Arytera* sp., aff. *litoralis* Blume, '*litoralis* complex'	Sapindaceae
takevam	*Tectaria menyanthides* (Presl) Copeland	Tectaria group
taleba	*Cupaniopsis macropetala* Radlk.	Sapindaceae
tatar-ulalat	*Podocarpus* cf. *rumphii* Blume	Podocarpaceae
televa-nganam	*Pseuderanthemum* sp., cf. '*variabile* group' sensu Barker	Acanthaceae
tibaga	*Orania macropetala* Laut. & K. Schum.	Arecaceae
timaiyag-nav	*Calyptrocalyx albertisianus* Becc.	Arecaceae
timber-digeep	*Pandanus angiensis* Kaneh., or aff.	Pandanaceae
titirigi	*Licuala beccariana* Furtado	Arecaceae
titirigi	*Licuala* cf. *beccariana* Furtado	Arecaceae
tuar	*Callicarpa longifolia* Lamk	Verbenaceae

tuar	*Mycetia javanica* (Blume) Reinw. ex Korth.	Rubiaceae
tukum-avang	*Medinilla* sp., aff. *tenuipedicellata* Baker f.	Melastomataceae
tuturat	*Stachytarpheta cayennensis* (Rich.) M. Vahl	Verbenaceae
uaia	*Tabernaemontana aurantiaca* Gaud.	Apocynaceae
uduat-murukun	*Alocasia aequiloba* N.E. Br.	Araceae
ugag	*Mussaenda cylindrocarpa* Burck	Rubiaceae
ulengkuduv	*Calyptrocalyx hollrungii* Becc.	Arecaceae
umbol-lap	*Sabia pauciflora* Blume	Sabiaceae
umbol-menyap	*Tabernaemontana aurantiaca* Gaud.	Apocynaceae
undu-beb	*Peristylus ?papuana* J.J. Sm.	Orchidaceae
urat	*Canthium* sp.	Rubiaceae
urat	*Neuburgia rumphiana* Leenh.	Loganiaceae
urem dagur	*Hibiscus ellipticifolius* Borss.	Malvaceae
usiman-kekerup	*Diospyros papuana* Valeton ex Bakh.	Ebenaceae
vah-tib	*Diplora d'urvillaei* (Bory) C. Chr.	Aspleniaceae
vap	*Amischotolype mollissima* Hassk.	Commelinaceae
varatep	*Dendrobium macrophyllum* A. Reich.	Orchidaceae
vebum	*Callipteris prolifera* (Lamk) Bory	Athyriaceae
vebum	*Pleocnemia macrodonta* (Fée) Holttum	Tectaria group
vebum	*Pneumatopteris sogerensis* (Gepp) Holttum	Thelypteridaceae
vi-yop	*Leucosyke* cf. *capitellata* (Poir.) Chew	Urticaceae
vinisa	*Cryptocarya laevigata* Blume	Lauraceae
voa-baga-bungam	*Dichapetalum sessiliflorum* Leenh.	Dichapetalaceae
vogerdak	*Haplostichanthus longirostris* (Scheffer) van Heusden	Annonaceae
vogo-gon-dab	*Pseuduvaria* sp.	Annonaceae
vokor	*Buchanania macrocarpa* Laut.	Anacardiaceae
vorap	*Rubus moluccanus* L. var. *discolor* (Blume) Kalkman	Rosaceae
wadi-diri	*Cupaniopsis macropetala* Radlk.	Sapindaceae
wagu-wagum	*Leptaspis urceolata* (Roxb.) R. Br.	Poaceae
wah-ran-gab	*Ficus subulata* Blume	Moraceae
waipa	*Versteegia cauliflora* (K. Schum. & Laut.) Valeton	Rubiaceae
wakup	*Antidesma katikii* Airy Shaw	Stilaginaceae
walo	*Cucurbita* sp.	Cucurbitaceae
wana-barewa	*Psychotria* sp. nov.	Rubiaceae
wanam-barewa	*Versteegia grandifolia* Valeton	Rubiaceae
wanclap	*Melicope* sp., cf. *M. burttiana* Stone or *M. grandifolia* Burtt	Rutaceae
wandarumep	*Cyrtosperma cuspidispathum* Alderw.	Araceae
wang-gep	*Saprosma subrepandum* (K. Schum. & Laut.) Valeton	Rubiaceae
wanga udial	*Cyathocalyx* sp. ?nov.	Annonaceae
wange-abab	*Tarenna gülcheriana* (K. Schum.) Valeton	Rubiaceae
wange-warap	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
wansalup	*Breynia cernua* (Poir.) Muell. Arg.	Euphorbiaceae
wapa-ruap	*Crinum asiaticum* L.	Amaryllidaceae
wara-tep	*Antrophyum* cf. *reticulatum* (Forst.) Kaulf.	Vittariaceae
wara-tep	*Microsorum linguiforme* (Mett.) Copel.	Polypodiaceae
warang-gab	*Poikilospermum amboinense* Zipp. ex Miq.	Cecropiaceae
warang-gap	*Aglaia cuspidata* C. DC.	Meliaceae
warap-tep	*Aglaomorpha drynarioides* (Hooker) Roos	Polypodiaceae
warubu-nganam	*Glochidion chondrocarpum* Airy Shaw, or aff.	Euphorbiaceae
warubu-sopasop	*Dysoxylum brassii* Merr. & Perry	Meliaceae
warubu-taleba	*Dysoxylum pettigrewianum* F.M. Bailey	Meliaceae

wasagep	*Psychotria* sp., aff. *micralabastra* (Laut. & K. Schum.) Valeton	Rubiaceae
wasimi	*Diplora d'urvillaei* (Bory) C. Chr.	Aspleniaceae
wat-uduat	*Maniltoa schefferi* K. Schum. & Hollrung	Caesalpiniaceae
wat-ukauel	*Smilax* cf. *australis* R. Br.	Smilacaceae
wat-urimap	*Cyathocalyx papuanus* Diels, or aff.	Annonaceae
wat-virimav	*Arytera* sp., aff. *litoralis* Blume, '*litoralis* complex'	Sapindaceae
wata-katok	*Freycinetia* sp.	Pandanaceae
wato-karok	*Pothos papuanus* Becc. ex Engl.	Araceae
watulam	*Psychotria membranifolia* Bartl. ex DC.	Rubiaceae
wedem-lalaut	*Cephalomanes atrovirens* Presl	Hymenophyllaceae
wegem-lalaut	*Huperzia* cf. *squarrosa* (Forst. f.) Trevisan	Lycopodiaceae
widasag	*Glochidion granulare* Airy Shaw	Euphorbiaceae
wingam	*Semecarpus forstenii* Blume	Anacardiaceae
wo-mamb	*Aporosa* cf. *papuana* Pax & Hoffm.	Euphorbiaceae
wo-roon-botop	*Pipturus argenteus* (Forst. f.) Wedd.	Urticaceae
wo-sarep	*Psychotria mayana* Takeuchi	Rubiaceae
wo-sayep	*Calycosia mamosei* Takeuchi	Rubiaceae
wo-wop	*Callipteris spinulosa* (Blume) J. Smith	Athyriaceae
wonkibung	*Cryptocarya weinlandii* K. Schum.	Lauraceae
wuka-wukap	*Cyperus kyllingia* Endl.	Cyperaceae
wumbu-ngam	*Endospermum moluccanum* (Teijsm. & Binn.) Kurz	Euphorbiaceae
wung-wanam	*Artocarpus communis* J.R. & G. Forst.	Moraceae
wungo-bunyam	*Wedelia biflora* (L.) DC.	Asteraceae
yag-ikikav	*Blumea arfakiana* Martelli	Asteraceae
yag-mara-marav	*Begonia pseudolateralis* Warburg	Begoniaceae
yag-sawea	*Clerodendrum porphyrocalyx* Laut. & K. Schum.	Verbenaceae
yag-tauita	*Tarenna gülcheriana* (K. Schum.) Valeton	Rubiaceae
yavera-ukum	*Fagraea ceilanica* Thunb.	Loganiaceae

Taxa represented by Maian orthographic variants: *Aceratium ledermannii* Schltr., sangu-mutup, sigirpa-nganam; *Aglaia lepidopetala* Harms, buku, buku-wabado; *Aglaia saxonii* Takeuchi, buku, take-takel; *Alocasia aequiloba* N.E. Br., mang-gap, moyab-pooh, uduat-murukun; *Amaracarpus grandifolius* Valeton, babagalum, nasag; *Amaracarpus* sp., aff. *longifolius* Valeton, ngapar-nganam, sakamb, sivar-viav; *Amischotolype mollissima* Hassk., keiki, vap; *Aphanamixis polystachya* (Wall.) R.N. Parker, korang-korang, seger; *Arytera* sp., aff. *litoralis* Blume, take-takepa, wat-virimav; *Averrhoa bilimbi* L., monia-kiui-kiva, sepi-sepib; *Begonia papuana* Warburg, damu-kwa, rubu-rubu; *Begonia pseudolateralis* Warburg, rubu-rubu, yag-mara-marav; *Callipteris prolifera* (Lam.) Bory, ma-bairap, vebum; *Calycosia mamosei* Takeuchi, rubu-rubu, wo-sayep; *Cephalomanes atrovirens* Presl, singi-singgip, wedem-lalaut; *Cryptocarya laevigata* Blume, monia-nasag, rubu-gem-nasag, vinisa; *Cupaniopsis macropetala* Radlk., taleba, wadi-diri; *Diospyros papuana* Valeton ex Bakh., angkumamb, usiman-kekerup; *Diplora d'urvillaei* (Bory) C. Chr., vah-tib, wasimi; *Dysoxylum sparsiflorum* Mabberley, i-pap, palisar; *Ficus odoardi* King, maboramb, ngoku; *Garcinia maluensis* Laut., da-da-da-dag, magule; *Geniostoma rupestre* J.R. & G. Forst., ivang-glu, kivi-kiva, ngawar-dodol; *Glochidion granulare* Airy Shaw, koita, widasag; *Holochlamys beccarii* Engl., kolaiv, ma-nem-gab; *Horsfieldia subtilis* (Miq.) Warb. var. *subtilis*, dalulup, kobou-susul; *Inocarpus fagifer* (Parkinson) Fosberg, eve, mor; *Lepisanthes senegalensis* (Poir.) Leenh., kibi-kibale, se-bip, wange-warap; *Lindsaea obtusa* J. Smith, dago-dagol, singi-singgip; *Lindsaea tenuifolia* Blume, lasa-lasa, singi-singgip; *Mussaenda cylindrocarpa* Burck, mum-nganam, pah-tooey, ugag; *Myristica lancifolia* Poir. subsp. *lancifolia*, sagua, sang-guab; *Phaleria coccinea* (Gaud.) F.v.M., ivanum, kibi-kibale; *Phrynium pedunculatum* Warburg, or aff., kamasasak, tah-bop; *Phyllanthus rubriflorus* J.J. Sm., esg-ese-ya, seger-buga; *Piper decumanum* (Rumph.) L., amora-kamorap, muara-muarav; *Pipturus argenteus* (Forst. f.) Wedd., bial, wo-roon-botop; *Pisonia longirostris* Teijsm. & Binn., aru, sesambop; *Pleocnemia macrodonta* (Fée) Holttum, lasa-lasa, vebum; *Psychotria dipteropoda* Laut. & K. Schum., mumbutakut, osag-rep; *Psychotria mayana* Takeuchi, babagalum, wo-sarep; *Psychotria membranifolia* Bartl. ex DC., ngayom-nasag, watulam; *Psychotria phaeochlamys* (Laut. & K. Schum.) Valeton, babagalum, ga-tsurup;

Psychotria sp. nov., sob-barewa, wanambarewa; *Rinorea horneri* (Korth.) O.K., ninara-umu, sekera-nasag; *Steganthera dentata* (Valeton) Kaneh. & Hatus., ave-namb, marap; *Tabernaemontana aurantiaca* Gaud., uaia, umbol-menyap; *Tarenna gülcheriana* (K. Schum.) Valeton, wange-abab, yag-tauita; *Terminalia impediens* Coode, bogang-dap, danga-namb; *Versteegia cauliflora* (K. Schum. & Laut.) Valeton, idi-muyat, waipa.

APPENDIX 2A
THE SCIENTIFIC EQUIVALENTS OF MAIAN (TOKPLES) PLANT NAMES (ALPHABETICAL BY GENUS)

Maian Name	Scientific Binomial	Family
dide-lolol	*Abrus pulchellus* Thwaites ssp. *pulchellus*	Fabaceae
sangu-mutup	*Aceratium ledermannii* Schltr.	Elaeocarpaceae
sigirpa-nganam	*Aceratium ledermannii* Schltr.	Elaeocarpaceae
oro-momb	*Achyranthes bidentata* Blume	Amaranthaceae
musus	*Ageratum conyzoides* L.	Asteraceae
seger-nanam	*Aglaia agglomerata* Merr. & Perry	Meliaceae
dzam	*Aglaia agglomerata* Merr. & Perry, or aff.	Meliaceae
warang-gap	*Aglaia cuspidata* C. DC.	Meliaceae
buku	*Aglaia lepidopetala* Harms	Meliaceae
buku-wabado	*Aglaia lepidopetala* Harms	Meliaceae
ngaun-nasag	*Aglaia sapindina* (F.v.M.) Harms	Meliaceae
buku	*Aglaia saxonii* Takeuchi	Meliaceae
take-takel	*Aglaia saxonii* Takeuchi	Meliaceae
warap-tep	*Aglaomorpha drynarioides* (Hooker) Roos	Polypodiaceae
boagalum	*Airosperma psychotrioides* Laut. & K. Schum.	Rubiaceae
davaru-guar	*Alangium villosum* (Blume) Wangerin	Alangiaceae
mang-gap	*Alocasia aequiloba* N.E. Br.	Araceae
moyab-pooh	*Alocasia aequiloba* N.E. Br.	Araceae
uduat-murukun	*Alocasia aequiloba* N.E. Br.	Araceae
gabin	*Alocasia brancifolia* (Schott) A. Hay	Araceae
muania-kivikiva	*Alocasia* cf. *hollrungii* Engl.	Araceae
man-gab	*Alocasia lancifolia* Engl.	Araceae
mang-gap	*Alocasia lauterbachiana* (Engl.) A. Hay	Araceae
babagalum	*Amaracarpus grandifolius* Valeton	Rubiaceae
nasag	*Amaracarpus grandifolius* Valeton	Rubiaceae
sivar-viav	*Amaracarpus* sp., aff. '*attenuatus-heteropus* group'	Rubiaceae
ngapar-nganam	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
sakamb	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
sivar-viav	*Amaracarpus* sp., aff. *longifolius* Valeton	Rubiaceae
arep	*Amaracarpus* sp.	Rubiaceae
tai-namb	*Amaranthus dubius* Thell.	Amaranthaceae
keiki	*Amischotolype mollissima* Hassk.	Commelinaceae
vap	*Amischotolype mollissima* Hassk.	Commelinaceae
man-trep	*Anacolosa* cf. *papuana* Schellenb.	Olacaceae
ker-ker-kanamb	*Aneilema vitiense* Seem.	Commelinaceae
say-veb	*Aneilema* sp., aff. ?*humile* Warburg	Commelinaceae
tagle	*Antiaropsis decipiens* K. Schum.	Moraceae
wakup	*Antidesma katikii* Airy Shaw	Stilaginaceae
wara-tep	*Antrophyum* cf. *reticulatum* (Forst.) Kaulf.	Vittariaceae
korang-korang	*Aphanamixis polystachya* (Wall.) R.N. Parker	Meliaceae
seger	*Aphanamixis polystachya* (Wall.) R.N. Parker	Meliaceae
wo-mamb	*Aporosa* cf. *papuana* Pax & Hoffm.	Euphorbiaceae
dodor	*Archidendron aruense* (Warburg) de Wit	Mimosaceae

buburat	*Archidendron bellum* Harms	Mimosaceae
ese-esea	*Ardisia imperialis* K. Schum.	Myrsinaceae
manekap	*Areca macrocalyx* Zipp. ex Blume	Arecaceae
mane-kav	*Areca* cf. *macrocalyx* Zipp. ex Blume	Arecaceae
wung-wanam	*Artocarpus communis* J.R. & G. Forst.	Moraceae
take-takepa	*Arytera* sp., aff. *litoralis* Blume, '*litoralis* complex'	Sapindaceae
wat-virimav	*Arytera* sp., aff. *litoralis* Blume, '*litoralis* complex'	Sapindaceae
lasa-lasa	*Asplenium* cf. *affine* Swartz, '*affine-cuneatum* group'	Aspleniaceae
dago-dagol	*Asplenium* cf. *amboinense* Willd.	Aspleniaceae
sibi-namb	*Asplenium* cf. *amboinense* Willd.	Aspleniaceae
baratep	*Asplenium nidus* L. var. *nidus*	Aspleniaceae
lago-lagod	*Asplenium phyllitidus* Don ssp. *malesicum* Holttum	Aspleniaceae
akakarap-nevermbup	*Asplenium subemarginatum* Rosenst.	Aspleniaceae
monia-kiui-kiva	*Averrhoa bilimbi* L.	Oxalidaceae
sepi-sepib	*Averrhoa bilimbi* L.	Oxalidaceae
baliab	*Bambusa microcephala* (Pilger) Holttum	Poaceae
gaira-malapta	*Barringtonia calyptrocalyx* K. Schum. var. *mollis* Laut.	Barringtoniaceae
damu-kwa	*Begonia papuana* Warburg	Begoniaceae
rubu-rubu	*Begonia papuana* Warburg	Begoniaceae
rubu-rubu	*Begonia* cf. *papuana* Warburg	Begoniaceae
rubu-rubu	*Begonia pseudolateralis* Warburg	Begoniaceae
yag-mara-marav	*Begonia pseudolateralis* Warburg	Begoniaceae
yag-ikikav	*Blumea arfakiana* Martelli	Asteraceae
kaka-kalap	*Bolbitis heteroclita* (Presl) Ching	Lomariopsidaceae
lasa-lasa	*Bolbitis quoyana* (Gaud.) Ching	Lomariopsidaceae
sob-takevam	*Bolbitis* cf. *quoyana* (Gaud.) Ching	Lomariopsidaceae
kalebuang	*Brassiophoenix schumannii* (Becc.) Essig	Arecaceae
wansalup	*Breynia cernua* (Poir.) Muell. Arg.	Euphorbiaceae
vokor	*Buchanania macrocarpa* Laut.	Anacardiaceae
kolaben	*Calamus humboldtianus* Becc.	Arecaceae
tuar	*Callicarpa longifolia* Lamk	Verbenaceae
ma-bairap	*Callipteris prolifera* (Lamk) Bory	Athyriaceae
vebum	*Callipteris prolifera* (Lamk) Bory	Athyriaceae
wo-wop	*Callipteris spinulosa* (Blume) J. Smith	Athyriaceae
staylki	*Calopogonium mucunoides* Desv.	Fabaceae
seger-buga	*Calycacanthus magnusianum* K. Schum.	Acanthaceae
rubu-rubu	*Calycosia mamosei* Takeuchi	Rubiaceae
wo-sayep	*Calycosia mamosei* Takeuchi	Rubiaceae
timaiyag-nav	*Calyptrocalyx albertisianus* Becc.	Arecaceae
ulengkuduv	*Calyptrocalyx hollrungii* Becc.	Arecaceae
urat	*Canthium* sp.	Rubiaceae
koita	*Casearia erythrocarpa* Sleumer	Flacourtiaceae
ninara-naumu	*Casearia macrantha* Gilg, or aff.	Flacourtiaceae
lala-lala	*Cayratia geniculata* (Blume) Gagn.	Vitaceae
bee-en	*Centrosema pubescens* Benth.	Fabaceae
singi-singgip	*Cephalomanes atrovirens* Presl	Hymenophyllaceae
wedem-lalaut	*Cephalomanes atrovirens* Presl	Hymenophyllaceae
kasuar-mudu-mado	*Cerbera floribunda* K. Schum.	Apocynaceae
seger	*Chisocheton pohlianus* Harms	Meliaceae
seger	*Chisocheton* cf. *pohlianus* Harms	Meliaceae
maberu	*Cleistanthus* sp., aff. ?*papuanus* (Laut.) Jabl.	Euphorbiaceae
yag-sawea	*Clerodendrum porphyrocalyx* Laut. & K. Schum.	Verbenaceae

pale-palel	*Codiaeum variegatum* (L.) Blume	Euphorbiaceae
buasum	*Codiaeum* sp.	Euphorbiaceae
ah-rap	*Coix lachryma-jobi* L.	Poaceae
sagag-mum	*Colocasia esculenta* (L.) Schott	Araceae
mua-muadi	*Cominsia gigantea* (Scheffer) K. Schum.	Marantaceae
ta-wop	*Cominsia* cf. *minor* Valeton	Marantaceae
kalagid	*Cordyline fruticosa* (L.) A. Chev.	Agavaceae
keiki	*Costus speciosus* (Koen.) J. Smith	Costaceae
wapa-ruap	*Crinum asiaticum* L.	Amaryllidaceae
monia-nasag	*Cryptocarya laevigata* Blume	Lauraceae
rubu-gem-nasag	*Cryptocarya laevigata* Blume	Lauraceae
vinisa	*Cryptocarya laevigata* Blume	Lauraceae
wonkibung	*Cryptocarya weinlandii* K. Schum.	Lauraceae
walo	*Cucurbita* sp.	Cucurbitaceae
taleba	*Cupaniopsis macropetala* Radlk.	Sapindaceae
wadi-diri	*Cupaniopsis macropetala* Radlk.	Sapindaceae
giliba	*Curculigo capitulata* (Lour.) Kuntze	Hypoxidaceae
giligelum	*Curcuma* cf. *australasica* Hooker f.	Zingiberaceae
wat-urimap	*Cyathocalyx papuanus* Diels, or aff.	Annonaceae
wanga udial	*Cyathocalyx* sp. ?nov.	Annonaceae
masa-wun-bandep	*Cyperus diffusus* Vahl var. *diffusus*	Cyperaceae
wuka-wukap	*Cyperus kyllingia* Endl.	Cyperaceae
migim	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
rubu-rubu	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
sa-kamb	*Cyrtandra* sp., section *Centrosiphon*	Gesneriaceae
se-vep	*Cyrtococcum accrescens* (Trin.) Stapf	Poaceae
wandarumep	*Cyrtosperma cuspidispathum* Alderw.	Araceae
duat-murukun	*Cyrtosperma* cf. *macrotum* Becc. ex Engl.	Araceae
ah-nah-sahr	*Decaspermum bracteatum* (Roxb.) A.J. Scott var. *bracteatum*	Myrtaceae
varatep	*Dendrobium macrophyllum* A. Reich.	Orchidaceae
ambup	*Dendrocnide ternatensis* (Miq.) Chew	Urticaceae
bago-bagot	*Dianella ensifolia* (L.) DC.	Liliaceae
voa-baga-bungam	*Dichapetalum sessiliflorum* Leenh.	Dichapetalaceae
sakamb	*Dicliptera papuana* Warburg	Acanthaceae
angkumamb	*Diospyros papuana* Valeton ex Bakh.	Ebenaceae
usiman-kekerup	*Diospyros papuana* Valeton ex Bakh.	Ebenaceae
vah-tib	*Diplora d'urvillaei* (Bory) C. Chr.	Aspleniaceae
wasimi	*Diplora d'urvillaei* (Bory) C. Chr.	Aspleniaceae
kadimu	*Donax cannaeformis* (Forst. f.) K. Schum.	Marantaceae
duaram	*Dracaena angustifolia* Roxb.	Dracaenaceae
warubu-sopasop	*Dysoxylum brassii* Merr. & Perry	Meliaceae
warubu-taleba	*Dysoxylum pettigrewianum* F.M. Bailey	Meliaceae
i-pap	*Dysoxylum sparsiflorum* Mabberley	Meliaceae
palisar	*Dysoxylum sparsiflorum* Mabberley	Meliaceae
sakas-sakamb	*Eclipta prostrata* (L.) L.	Asteraceae
kuvu-kuv	*Elatostema novoguineense* Warburg, or aff.	Urticaceae
sumbu-wadab	*Elatostema novoguineense* Warburg, or aff.	Urticaceae
rubu-rubu	*Elatostema* sp., aff. *macrophyllum* Brongn.	Urticaceae
badidir	*Elattostachys obliquinervis* Radlk.	Sapindaceae
wumbu-ngam	*Endospermum moluccanum* (Teijsm. & Binn.) Kurz	Euphorbiaceae
dawaba-sivar	*Entada phaseoloides* (L.) Merr.	Mimosaceae
buko-bukop	*Equisetum ramosissimum* Desf. ssp. *debile* (Vauch.) Hauke	Equisetaceae
ai-ke-kav	*Erechtites valerianifolia* (Wolf) DC.	Asteraceae

pat dumudumar	*Eriandra fragrans* van Royen & Steen.	Polygalaceae
maberu	*Erythrospermum candidum* (Becc.) Becc.	Flacourtiaceae
kasiwar-gili-gilib	*Etlingera dekockii* (Valeton) R.M. Smith	Zingiberaceae
lam	*Euphorbia hirta* L.	Euphorbiaceae
yavera-ukum	*Fagraea ceilanica* Thunb.	Loganiaceae
seger-nganam	*Fahrenheitia* sp. ?nov.	Euphorbiaceae
tagle	*Ficus ampelas* Burm. f.	Moraceae
mariap-tobitobi	*Ficus bernaysii* King	Moraceae
bulubul	*Ficus botryocarpa* Miq. var. *subalbidoramea* (Elmer) Corner	Moraceae
pake-koal	*Ficus congesta* Roxb.	Moraceae
mariap-tobitobi	*Ficus conocephalifolia* Ridl.	Moraceae
dambotan	*Ficus dammaropsis* Diels var. *obtusa* Corner	Moraceae
keimang	*Ficus hystricicarpa* Warburg	Moraceae
mutu-ngomb	*Ficus mollior* Benth.	Moraceae
maboramb	*Ficus odoardi* King	Moraceae
ngoku	*Ficus odoardi* King	Moraceae
ta-kup	*Ficus pungens* Reinw. ex Blume	Moraceae
wah-ran-gab	*Ficus subulata* Blume	Moraceae
diga	*Ficus wassa* Roxb.	Moraceae
seger-buga	*Flacourtia inermis* Roxb.	Flacourtiaceae
wata-katok	*Freycinetia* sp.	Pandanaceae
dawab	*Garcinia dulcis* (Roxb.) Kurz	Clusiaceae
da-da-da-dag	*Garcinia maluensis* Laut.	Clusiaceae
magule	*Garcinia maluensis* Laut.	Clusiaceae
mugum	*Gastonia spectabilis* (Harms) Philipson	Araliaceae
ivang-glu	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
kivi-kiva	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
ngawar-dodol	*Geniostoma rupestre* J.R. & G. Forst.	Loganiaceae
warubu-nganam	*Glochidion chondrocarpum* Airy Shaw, or aff.	Euphorbiaceae
koita	*Glochidion granulare* Airy Shaw	Euphorbiaceae
widasag	*Glochidion granulare* Airy Shaw	Euphorbiaceae
kawari	*Gnetum costatum* K. Schum.	Gnetaceae
kwarikioari	*Gnetum gnemonoides* Brongn.	Gnetaceae
sang-guab	*Goniothalamus imbricatus* Scheffer	Annonaceae
sang-guab	*Goniothalamus* cf. *imbricatus* Scheffer	Annonaceae
sivar-wiav	*Goniothalamus* cf. *imbricatus* Scheffer	Annonaceae
sivaru-guaru	*Goniothalamus* sp.	Annonaceae
dai-dai-sivar	*Gouania* cf. *javanica* Miq.	Rhamnaceae
mago-ragor	*Grammatophyllum papuanum* J.J. Sm.	Orchidaceae
muonia-kivikiva	*Graptophyllum pictum* (L.) Griff.	Acanthaceae
vogerdak	*Haplostichanthus longirostris* (Scheffer) van Heusden	Annonaceae
lomal-nganam	*Harpullia crustacea* Radlk.	Sapindaceae
rasapakay	*Harpullia ramiflora* Radlk.	Sapindaceae
muat-upot-ugarum	*Hedyotis* sp., cf. *H. auricularia* L., or *H. lapeyrousii* DC.	Rubiaceae
ngavisi	*Helicia affinis* Sleumer	Proteaceae
gemea	*Heliconia papuana* W.J. Kress	Heliconiaceae
urem dagur	*Hibiscus ellipticifolius* Borss.	Malvaceae
kolaiv	*Holochlamys beccarii* Engl.	Araceae
ma-nem-gab	*Holochlamys beccarii* Engl.	Araceae
ango-leb	*Homalomena magna* A. Hay	Araceae
kibaip	*Homalomena* cf. *magna* A. Hay	Araceae
dalulup	*Horsfieldia subtilis* (Miq.) Warburg var. *subtilis*	Myristicaceae

kobou-susul	*Horsfieldia subtilis* (Miq.) Warburg var. *subtilis*	Myristicaceae
mekukum	*Hoya pottsii* F.M. Bailey	Asclepiadaceae
kaiam-mulava	*Hulemacanthus novoguineensis* (Lindau) Bremek.	Acanthaceae
wegem-lalaut	*Huperzia* cf. *squarrosa* (Forst. f.) Trevisan	Lycopodiaceae
bailarum	indet.	Orchidaceae
mandurup	indet.	Orchidaceae
sakomb	indet.	indet.
eve	*Inocarpus fagifer* (Parkinson) Fosb.	Fabaceae
mor	*Inocarpus fagifer* (Parkinson) Fosb.	Fabaceae
eve	*Inocarpus* (close to) '*rubidus*' morphotype fide Verdcourt	Fabaceae
bimur-nganam	*Intsia bijuga* (Colebr.) Kuntze	Caesalpiniaceae
kalikal	*Ipomoea congesta* R. Br.	Convolvulaceae
kibi-kibale	*Ixora* sp., section *Hypsophyllum*	Rubiaceae
muat-upot-ugarum	*Justicia* sp.	Acanthaceae
gawok	*Laportea decumana* (Roxb.) Wedd.	Urticaceae
mane-mane-kav	*Lasianthus chlorocarpus* K. Schum.	Rubiaceae
kabav	*Leea* cf. *coryphantha* Laut.	Leeaceae
arab	*Leea heterodoxa* K. Schum. & Laut.	Leeaceae
kabav	*Leea indica* (Burm. f.) Merr.	Leeaceae
kibi-kibale	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
se-bip	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
wange-warap	*Lepisanthes senegalensis* (Poir.) Leenh.	Sapindaceae
wagu-wagum	*Leptaspis urceolata* (Roxb.) R. Br.	Poaceae
vi-yop	*Leucosyke* cf. *capitellata* (Poir.) Chew	Urticaceae
titirigi	*Licuala beccariana* Furtado	Arecaceae
titirigi	*Licuala* cf. *beccariana* Furtado	Arecaceae
dago-dagol	*Lindsaea obtusa* J. Smith	Lindsaea group
singi-singgip	*Lindsaea obtusa* J. Smith	Lindsaea group
singi-singgip	*Lindsaea* cf. *obtusa* J. Smith	Lindsaea group
lasa-lasa	*Lindsaea tenuifolia* Blume	Lindsaea group
singi-singgip	*Lindsaea tenuifolia* Blume	Lindsaea group
dago-dagol	*Liparis condylobulbon* Reichb f.	Orchidaceae
ma-bairap	*Lomagramma* cf. *sinuata* C. Chr.	Lomariopsidaceae
nasag muani	*Lunasia amara* Blanco var. *amara*	Rutaceae
boa-boak	*Lygodium circinnatum* (Burm. f.) Swartz	Schizaeaceae
kaposika	*Macaranga fallacina* Pax & Hoffm.	Euphorbiaceae
puale-pualel	*Mackinlaya celebica* (Harms) Philipson	Araliaceae
wat-uduat	*Maniltoa schefferi* K. Schum. & Hollrung	Caesalpiniaceae
gilagal	*Mapania macrocephala* (Gaud.) K. Schum. ssp. *macrocephala*	Cyperaceae
nganam idir idir	*Medinilla triplinervia* Cogn., '*mufoso-triplinervia* group'	Melastomataceae
idi-dir	*Medinilla* sp., aff. *tenuipedicellata* Baker f.	Melastomataceae
tukum-avang	*Medinilla* sp., aff. *tenuipedicellata* Baker f.	Melastomataceae
mane-mane-kav	*Medusanthera laxiflora* (Miers) Howard	Icacinaceae
wanclap	*Melicope* sp., cf. *M. burttiana* Stone or *M. grandifolia* Burtt	Rutaceae
muiyam	*Melodinus* cf. *acutus* (Markgraf) Markgraf	Apocynaceae
bal-sivar	*Merremia peltata* (L.) Merr.	Convolvulaceae
mouko	*Microcos* sp. ?nov.	Tiliaceae
ah-maap	*Micromelum minutum* (Forst. f.) Wight & Walker-Arnott	Rutaceae
wara-tep	*Microsorum linguiforme* (Mett.) Copel.	Polypodiaceae
lasa-lasa	*Microsorum membranifolium* (R. Br.) Ching	Polypodiaceae

boge-namb	*Morinda umbellata* L. var. *papuana* Valeton	Rubiaceae
say-ri-keep	*Mucuna cyanosperma* K. Schum.	Fabaceae
go-idi	*Musa banksii* F.v.M.	Musaceae
mum-nganam	*Mussaenda cylindrocarpa* Burck	Rubiaceae
pah-tooey	*Mussaenda cylindrocarpa* Burck	Rubiaceae
ugag	*Mussaenda cylindrocarpa* Burck	Rubiaceae
tuar	*Mycetia javanica* (Blume) Reinw. ex Korth.	Rubiaceae
sagua	*Myristica lancifolia* Poir. ssp. *lancifolia*	Myristicaceae
sang-guab	*Myristica lancifolia* Poir. ssp. *lancifolia*	Myristicaceae
kobos-susul	*Myristica subalulata* Miq. var. *subalulata*	Myristicaceae
sagua	*Myristica tristis* Warburg, or aff.	Myristicaceae
amungcurcuri	*Neisosperma citrodorum* (Laut. & K. Schum.) Fosb. & Sach.	Apocynaceae
sretu-ngomb	*Neisosperma citrodorum* (Laut. & K. Schum.) Fosb. & Sach.	Apocynaceae
mondi-minab	*Neuburgia corynocarpa* (A. Gray) Leenh.	Loganiaceae
urat	*Neuburgia rumphiana* Leenh.	Loganiaceae
quasi-kwas	*Ocimum gratissimum* L.	Lamiaceae
sivila	*Omphalea queenslandiae* F.M. Bailey	Euphorbiaceae
sauga-sivar	*Opilia amentacea* Roxb.	Opiliaceae
tibaga	*Orania macropetala* Laut. & K. Schum.	Arecaceae
mabarara-dangamb	*Osmelia philippina* (Turcz.) Benth.	Flacourtiaceae
mamba-mambap	*Osmoxylon sessiliflorum* (Laut.) Philipson	Araliaceae
mamba-mambap	*Osmoxylon* (closest to) *sessiliflorum* (Laut.) Philipson	Araliaceae
timber-digeep	*Pandanus angiensis* Kaneh., or aff.	Pandanaceae
kasapa	*Pangium edule* Reinw.	Flacourtiaceae
sauiak	*Panicum sarmentosum* Roxb.	Poaceae
bogo-namb	*Pararistolochia schlechteri* (Laut.) M.J. Parsons	Aristolochiaceae
guragor	*Paraserianthes falcataria* (L.) Nielsen cf. ssp. *falcataria*	Mimosaceae
undu-beb	*Peristylus ?papuana* J.J. Sm.	Orchidaceae
koitav	*Petalolophus* sp., aff. *megalopus* K. Schum.	Annonaceae
ivanum	*Phaleria coccinea* (Gaud.) F.v.M.	Thymelaeaceae
kibi-kibale	*Phaleria coccinea* (Gaud.) F.v.M.	Thymelaeaceae
mua-muadi	*Phrynium* cf. *macrocephalum* K. Schum.	Marantaceae
kamasasak	*Phrynium pedunculatum* Warburg, or aff.	Marantaceae
tah-bop	*Phrynium pedunculatum* Warburg, or aff.	Marantaceae
mua-muadi	*Phrynium* sp., aff. *macrocephalum* K. Schum.	Marantaceae
kamasosak	*Phrynium* sp.	Marantaceae
sopi-sebip	*Phylacium bracteosum* Benn.	Fabaceae
esg-ese-ya	*Phyllanthus rubriflorus* J.J. Sm.	Euphorbiaceae
seger-buga	*Phyllanthus rubriflorus* J.J. Sm.	Euphorbiaceae
arap	*Pimelodendron amboinicum* Hassk.	Euphorbiaceae
kamora-kamorap	*Piper caninum* Blume	Piperaceae
ah-mo-rap	*Piper* cf. *caninum* Blume	Piperaceae
amora-kamorap	*Piper decumanum* (Rumph.) L.	Piperaceae
muara-muarav	*Piper decumanum* (Rumph.) L.	Piperaceae
mora-morava	*Piper majusculum* Blume	Piperaceae
ibi-ibim	*Piper mestonii* F.M. Bailey	Piperaceae
mara-marav	*Piper pseudoamboinense* C. DC.	Piperaceae
mara-marav	*Piper pullibaccum* Trelease	Piperaceae
bial	*Pipturus argenteus* (Forst. f.) Wedd.	Urticaceae
wo-roon-botop	*Pipturus argenteus* (Forst. f.) Wedd.	Urticaceae
aru	*Pisonia longirostris* Teijsm. & Binn.	Nyctaginaceae

sesambop	*Pisonia longirostris* Teijsm. & Binn.	Nyctaginaceae
lasa-lasa	*Pleocnemia macrodonta* (Fée) Holttum	Tectaria group
vebum	*Pleocnemia macrodonta* (Fée) Holttum	Tectaria group
gaga-bumer	*Plesioneuron tuberculatum* (Cesati) Holttum	Thelypteridaceae
kidi-kidi	*Pleuranthodium* sp., ?*trichocalyx* (Valeton) R.M. Smith	Zingiberaceae
man-duroop	*Plocoglottis* cf. *moluccana* Schltr.	Orchidaceae
vebum	*Pneumatopteris sogerensis* (Gepp) Holttum	Thelypteridaceae
sana ngamb	*Pneumatopteris* sp., aff. *keysseriana* (Rosenst.) Holttum	Thelypteridaceae
tatar-ulalat	*Podocarpus* cf. *rumphii* Blume	Podocarpaceae
warang-gab	*Poikilospermum amboinense* Zipp. ex Miq.	Cecropiaceae
sigawag	*Polytocha macrophylla* Benth.	Poaceae
lawalang wiab	*Popowia* sp., aff. *pisocarpa* (Blume) Endl.	Annonaceae
sivar-wiav	*Popowia* sp.	Annonaceae
wato-karok	*Pothos papuanus* Becc. ex Engl.	Araceae
gagab	*Pothos rumphii* Schott	Araceae
pat dagol dagol	*Pronephrium micropinnatum* Holttum	Thelypteridaceae
televa-nganam	*Pseuderanthemum* sp., cf. '*variabile* group' sensu Barker	Acanthaceae
mavanda-ngamb	*Pseudobotrys dorae* Moeser	Icacinaceae
kolaiv-nganam	*Pseuduvaria* sp., aff. ?*versteegii* (Diels) Merr.	Annonaceae
sivar-wiav	*Pseuduvaria* sp.	Annonaceae
sivar-yadod	*Pseuduvaria* sp.	Annonaceae
vogo-gon-dab	*Pseuduvaria* sp.	Annonaceae
kututal	*Psychotria amplithyrsa* Valeton	Rubiaceae
mumbutakut	*Psychotria dipteropoda* Laut. & K. Schum.	Rubiaceae
osag-rep	*Psychotria dipteropoda* Laut. & K. Schum.	Rubiaceae
ngabu-ngabu	*Psychotria leptothyrsa* Miq. var. *leptothyrsa*	Rubiaceae
babagalum	*Psychotria mayana* Takeuchi	Rubiaceae
wo-sarep	*Psychotria mayana* Takeuchi	Rubiaceae
watulam	*Psychotria membranifolia* Bartl. ex DC.	Rubiaceae
ngayom-nasag	*Psychotria membranifolia* Bartl. ex DC.	Rubiaceae
ngayom-nasag	*Psychotria cf. membranifolia* Bartl. ex DC.	Rubiaceae
babagalum	*Psychotria phaeochlamys* (Laut. & K. Schum.) Valeton	Rubiaceae
ga-tsurup	*Psychotria phaeochlamys* (Laut. & K. Schum.) Valeton	Rubiaceae
sob-barewa	*Psychotria* sp. nov.	Rubiaceae
wana-barewa	*Psychotria* sp. nov.	Rubiaceae
babagalum	*Psychotria* sp., aff. *micralabastra* (Laut. & K. Schum.) Valeton	Rubiaceae
wasagep	*Psychotria* sp., aff. *micralabastra* (Laut. & K. Schum.) Valeton	Rubiaceae
giligelum-sivar	*Psychotria* (possibly new vining sp.)	Rubiaceae
gaga-bumer	*Pteris warburgii* Christ	Pteridaceae
idang io	*Ptyssiglottis pubisepala* (Lindau) B. Hansen	Acanthaceae
ngumusinam	*Pueraria pulcherrima* (Koorders) Koorders-Schumacher	Fabaceae
mago-ragor	*Pyrrosia princeps* (Mett.) Morton	Polypodiaceae
kasuar dadi	'*Randia*' sp., '*decora* Val., or *sphaerocarpa* K. Schum. facies'	Rubiaceae
ooh-rau-rap	*Rhaphidophora korthalsii* Schott	Araceae
gagap	*Rhaphidophora versteegii* Engler & Krause	Araceae
maberu	*Rhyticaryum longifolium* K. Schum. & Laut.	Icacinaceae

daveh-veh	*Rhyticaryum novoguineense* (Warburg) Sleumer	Icacinaceae
ma-rab	*Riedelia grandiligula* Valeton	Zingiberaceae
ma-rab	*Riedelia macrantha* K. Schum.	Zingiberaceae
ninara-umu	*Rinorea horneri* (Korth.) O.K.	Violaceae
sekera-nasag	*Rinorea horneri* (Korth.) O.K.	Violaceae
vorap	*Rubus moluccanus* L. var. *discolor* (Blume) Kalkman	Rosaceae
pat-sani-sani	*Ruellia* sp. (*Leptosiphonium*)	Acanthaceae
umbol-lap	*Sabia pauciflora* Blume	Sabiaceae
wang-gep	*Saprosma subrepandum* (K. Schum. & Laut.) Valeton	Rubiaceae
atep	*Schismatoglottis* sp.	Araceae
gibaiv	*Schismatoglottis* sp.	Araceae
kibaip	*Schismatoglottis* sp.	Araceae
kasipul	*Schizostachyum lima* (Blanco) Merr.	Poaceae
moimoit	*Scleria polycarpa* Boeck.	Cyperaceae
pupun-lov	*Selaginella* cf. *velutina* Cesati	Selaginellaceae
manda-peb	*Selaginella* sp., aff. ?*hieronymiana* v.A.v.R.	Selaginellaceae
lawa-lawat	*Semecarpus brachystachys* Merr. & Perry	Anacardiaceae
wingam	*Semecarpus forstenii* Blume	Anacardiaceae
lawa-lawat	*Semecarpus magnificus* K. Schum.	Anacardiaceae
wat-ukauel	*Smilax* cf. *australis* R. Br.	Smilacaceae
bo-rap	*Solanum torvum* Swartz	Solanaceae
kasiwar-gili-giliba	*Spathoglottis plicata* Blume ssp. *puberula* N.H.S. Howcroft	Orchidaceae
komekelak	*Sphaerostephanos arfakianus* (Baker) Holttum	Thelypteridaceae
ngaparu-pot	*Sphaerostephanos pilososquamatus* (v.A.v.R.) Holttum	Thelypteridaceae
tuturat	*Stachytarpheta cayennensis* (Rich.) M. Vahl	Verbenaceae
ave-namb	*Steganthera dentata* (Valeton) Kaneh. & Hatus.	Monimiaceae
marap	*Steganthera dentata* (Valeton) Kaneh. & Hatus.	Monimiaceae
bailalum	*Steganthera hirsuta* (Warburg) Perkins	Monimiaceae
aramitap	*Steganthera hospitans* (Becc.) Kaneh. & Hatus.	Monimiaceae
ma-bairap	*Stenochlaena milnei* Underwood	Blechnaceae
kokam-tol	*Sterculia schumanniana* (Laut.) Mildbr.	Sterculiaceae
nanggu-nanggu-nam	*Strobilanthes* s.l., *Hemigraphis primulifolia* (Nees) F. Vill. facies	Acanthaceae
sagag-gosmun	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sagag-u-goga-umun	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sagag-ugosum	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
sumure	*Strobilanthes* s.l. (*Hemigraphis* sp.)	Acanthaceae
mansu-borobor	*Syzygium aeoranthum* (Diels) Merr. & Perry	Myrtaceae
navyia	*Syzygium* cf. *amplum* Hartley & Perry	Myrtaceae
padada	*Syzygium hylophilum* (Laut. & K. Schum.) Merr. & Perry	Myrtaceae
mansu-borobor	*Syzygium longipes* Merr. & Perry	Myrtaceae
kah-bik	*Syzygium pteropodum* (Laut. & K. Schum.) Merr. & Perry	Myrtaceae
magule	*Syzygium trachyanthum* (Diels) Merr. & Perry	Myrtaceae
da-da-dag	*Syzygium* sp., aff. *goniopterum* (Diels) Merr. & Perry	Myrtaceae
navyia	*Syzygium* sp.	Myrtaceae
uaia	*Tabernaemontana aurantiaca* Gaud.	Apocynaceae
umbol-menyap	*Tabernaemontana aurantiaca* Gaud.	Apocynaceae
samangi manggib	*Tabernaemontana orientalis* R. Br.	Apocynaceae
keiti	*Tapeinochilos recurvatum* K. Schum.	Costaceae

keiti	*Tapeinochilos* sp. nov.	Costaceae
wange-abab	*Tarenna gülcheriana* (K. Schum.) Valeton	Rubiaceae
yag-tauita	*Tarenna gülcheriana* (K. Schum.) Valeton	Rubiaceae
takevam	*Tectaria menyanthides* (Presl) Copeland	Tectaria group
bogang-dap	*Terminalia impediens* Coode	Combretaceae
danga-namb	*Terminalia impediens* Coode	Combretaceae
anganange-woganamb	*Tetracera nordtiana* F.v.M.	Dilleniaceae
bodog	*Tetrastigma lauterbachianum* Gilg	Vitaceae
bon	*Thespesia fissicalyx* Borss.	Malvaceae
ma-kap	*Trichosanthes* sp.,'*longiflora-bracteata* group'	Cucurbitaceae
ikikap	*Tropidia disticha* Schltr.	Orchidaceae
idi-muyat	*Versteegia cauliflora* (K. Schum. & Laut.) Valeton	Rubiaceae
waipa	*Versteegia cauliflora* (K. Schum. & Laut.) Valeton	Rubiaceae
wanam-barewa	*Versteegia grandifolia* Valeton	Rubiaceae
ker-ker-kanamb	*Vrydagzynea* cf. *rivularis* Schltr.	Orchidaceae
wungo-bunyam	*Wedelia biflora* (L.) DC.	Asteraceae
maruruma	*Wenzelia dolichophylla* (Laut. & K. Schum.) Tanaka	Rutaceae
ngabu-kuruk	*Zanthoxylum conspersipunctatum* Merr. & Perry	Rutaceae
ambo-dera-namb	*Ziziphus djamuensis* Laut.	Rhamnaceae

APPENDIX 3

ETHNOBOTANICAL VALUE OF JOSEPHSTAAL PLANTS

PLANTS WITH FOOD VALUE

Amaranthus dubius Thell.; leaves edible

Artocarpus communis J.R. & G. Forst.; seeds are eaten

Bambusa microcephala (Pilger) Holttum; young shoots are eaten

Buchanania macrocarpa Laut.; the rotting wood is a particularly good source of edible larvae

Callipteris prolifera (Lamk) Bory; young shoots or fronds eaten as a vegetable, fed especially to children to promote their physical development

Callipteris spinulosa (Blume) J. Smith; new leaves are edible

Cucurbita sp.; fruits and leaves are edible

Diplora d'urvillaei (Bory) C. Chr.; leaves are burnt and the ashes used as salt

Ficus dammaropsis Diels var. *obtusa* Corner; fruit is edible

Ficus wassa Roxb.; eaten as a vegetable

Inocarpus 'rubidus' morphotype fide Verdcourt; seeds are edible

Lepisanthes senegalensis (Poir.) Leenh.; fruit is edible, fed especially to children to improve their growth

Lomagramma cf. *sinuata* C. Chr.; leaves are edible

Melicope sp., cf. *M. burttiana* Stone or *M. grandifolia* B.L. Burtt; the plant is a source of edible leaf caterpillars

Pangium edule Reinw.; seeds are edible

Pimelodendron amboinicum Hassk.; the dead dry wood is a good source of edible larvae

Pneumatopteris sogerensis (Gepp) Holttum; young shoots or fronds eaten as a vegetable

Pneumatopteris sp., aff. *keysseriana* (Rosenst.) Holttum; leaves edible, cooked with meat

Schismatoglottis sp.; young leaves are edible

Stenochlaena milnei Underwood; new leaves are edible

Terminalia impediens Coode; seed is edible

Trichosanthes sp., '*longiflora-bracteata* group'; fruit is edible

MEDICINAL OR PSYCHOACTIVE PLANTS

Alocasia aequiloba N.E. Br.; leaves used to treat pain from salat (stinging nettle) injuries

Alocasia lauterbachiana (Engl.) A. Hay; leaves used to alleviate pain from nettle stings

Areca cf. *macrocalyx* Zipp. ex Blume; chewed as a substitute for buai (betlenut)

Calyptrocalyx albertisianus Becc.; mature fruits chewed as a substitute for buai

Cassia alata L.; used to treat ringworm and skin diseases

Cyperus kyllingia Endl.; leaves are boiled and used for body aches and diarrhea

Euphorbia hirta L.; leaves boiled and the solution is used to treat fever and cold symptoms
Licuala beccariana Furtado; mature nuts are chewed as a buai substitute
Lunasia amara Blanco var. *amara*; young leaves heated over fire and the juice squeezed onto sores
Piper cf. *caninum* Blume; spikes and all other parts chewed with buai
Piper decumanum (Rumph.) L.; roots are chewed with buai
Psychotria membranifolia Bartl. ex DC.; roots mashed and mixed with coconut juice, given to children to treat malaria and stomach disorders
Scleria polycarpa Boeck.; plant is cooked in bamboo and eaten to induce abortion during the early stages of pregnancy, cf. *Mills s.n.* from Josephstaal
Tabernaemontana orientalis R. Br.; roots are boiled and the solution consumed to promote aggression

PLANTS USED IN CONSTRUCTION OR FOR MAKING IMPLEMENTS

Aglaia cuspidata C. DC.; wood is used for making spears
Alangium villosum (Blume) Wangerin ssp. *ferrugineum* (C.T.White) Bloembergen; poles used for house rafters
Brassiophoenix schumannii (Becc.) Essig; planks used as house flooring, also made into implements for sharpening bows and arrows
Calamus humboldtianus Becc.; canes are split and used as ropes for tying and fastening (e.g. house and fence construction)
Casearia macrantha Gilg, or aff.; poles used as digging implements
Cleistanthus sp., aff. ?*papuanus* (Laut.) Jabl.; poles for house building
Dichapetalum sessiliflorum Leenh.; used as ties and bindings in house construction
Donax cannaeformis (Forst. f.) K. Schum.; stems used as rope for house building
Dysoxylum sparsiflorum Mabberley; used for tool handles, wood is very strong
Garcinia maluensis Laut.; wood poles used as a digging stick or planting implement for yams and mami (*Dioscorea esculenta*)
Hibiscus ellipticifolius Borss.; bark is used as wall panels in houses
Intsia bijuga (Colebr.) Kuntze; trunks used for making garamuts, also a strong timber for house posts
Licuala beccariana Furtado; leaves used as roofing for bush shelters
Macaranga fallacina Pax & Hoffm.; used in making rafters for houses
Neuburgia corynocarpa (A. Gray) Leenh.; wood used in house construction
Porterandia sp.; poles are used in making cassowary traps
Pseuduvaria sp.; used as timber poles during house construction
Psychotria membranifolia Bartl. ex DC.; stems used as a planting implement for mami (*Dioscorea esculenta*)
Psychotria sp. nov.; the wood is used for making digging sticks for planting yams and mami (*Dioscorea esculenta*); crop yields are believed to increase when this particular wood is used
Schizostachyum lima (Blanco) Merr.; used for making bowstrings, cf. *R. Pullen 1117*
Versteegia cauliflora (K. Schum. & Laut.) Valeton; wood used as cultivation tool
Versteegia grandifolia Valeton; stem is used as a digging implement for planting, it is a traditional belief that this increases yam yields

PLANTS WITH CEREMONIAL, RITUALISTIC, OR SPIRITUAL APPLICATIONS

Aglaomorpha drynarioides (Hooker) Roos; leaves used in ritual ceremonies
Antrophyum cf. *reticulatum* (Forst.) Kaulf.; leaves used for decorative purposes as a traditional bilas
Dracaena angustifolia Roxb.; young leaves cut and put in bamboo; then used to wash children to prevent crying and chase away spirits
Entada phaseoloides (L.) Merr.; sap collected in bamboo, taro shoots are dipped into the sap and planted, said to increase yield
Euodia hortensis J.R. & G. Forst.; juice extract used to perfume bodies during sing-sings, cf. *NGF 10278*
Ficus odoardi King; sap is rubbed on yam before planting to increase growth
Holochlamys beccarii Engl.; used in magic rituals to increase abundance of game animals

Huperzia cf. *squarrosa* (Forst. f.) Trevisan; plant held skyward towards rain clouds as special incantations are spoken to stop the rain
Microsorum linguiforme (Mett.) Copel.; leaves used as traditional decoration in ceremonies
Neisosperma citrodorum (Laut. & K. Schum.) Fosb. & Sach.; sap from fruit is rubbed on yam before planting to increase yields
Piper mestonii F.M. Bailey; spikes used as decorative bilas in ceremonies
Tabernaemontana aurantiaca Gaud.; fruits are used as Christmas ornaments
Tabernaemontana orientalis R. Br.; flowers used in rituals to improve crop growth
Tetracera nordtiana F.v.M.; water in the vine is used in black magic to inflict illness
Trichosanthes sp.,'*longiflora-bracteata* group'; sap from vine is used in hunting rituals

PLANTS OF PARTICULAR VALUE TO WILDLIFE

Aceratium ledermannii Schltr.; mature fruits eaten by bandicoots
Aglaia lepidopetala Harms; mature fruits eaten by possums
Archidendron aruense (Warburg) de Wit; flower nectar sucked by bandicoots; seeds eaten by bandicoots
Arytera sp., aff. *litoralis* Blume,'*litoralis* complex'; fruit eaten by possums
Buchanania macrocarpa Laut.; fruits eaten by cassowaries and other birds
Calyptrocalyx albertisianus Becc.; mature fruits eaten by cassowaries
Casearia macrantha Gilg, or aff.; fruits eaten by possums
Cerbera floribunda K. Schum.; fruits eaten by cassowaries
Cryptocarya laevigata Blume; fruits eaten by cassowaries
Cyathocalyx papuanus Diels, or aff.; ripe fruits eaten by cassowaries
Diospyros papuana Valeton ex Bakh.; fruits swallowed by cassowaries
Dysoxylum brassii Merr. & Perry; ripe fruits eaten by possums
Dysoxylum pettigrewianum F.M. Bailey; ripe fruits eaten by possums
Ficus botryocarpa Miq. var. *subalbidoramea* (Elmer) Corner; mature fruits eaten by bandicoots and bats
Ficus congesta Roxb.; ripe fruits eaten by bandicoots
Ficus conocephalifolia Ridl.; fruits eaten by bandicoots
Ficus pungens Reinw. ex Blume; eaten by birds and bandicoots
Helicia affinis Sleumer; fruits eaten by cassowaries
Neuburgia rumphiana Leenh.; ripe fruits eaten by cassowaries
Orania macropetala Laut. & K. Schum.; ripe fruits eaten by cassowaries
Pangium edule Reinw.; seeds eaten by cassowaries
Pipturus argenteus (Forst. f.) Wedd.; fruits eaten by birds
Porterandia sp.; fruits are swallowed by cassowaries
Psychotria micralabastra (Laut. & K. Schum.) Valeton; fruits eaten by birds
Pyrrosia princeps (Mett.) Morton; used as shelter by possums
Syzygium aeoranthum (Diels) Merr. & Perry; many animals eat the fruit and seeds
Syzygium longipes Merr. & Perry; fruits eaten by cassowaries
Syzygium pteropodum (Laut. & K. Schum.) Merr. & Perry; fruits eaten by cassowaries

PLANTS USED ON DOGS

Aglaia sapindina (F.v.M.) Harms; young leaves are heated over fire, mashed, and the juice squeezed into a hunting dog's nostrils to improve its ability to track game
Alocasia aequiloba N.E. Br.; petiole base and roots fed to hunting dogs to stimulate aggression
Alocasia lancifolia Engl.; petiole base fed to dogs to stimulate aggression in the hunt
Cryptocarya laevigata Blume; fed to dogs to increase their ability to hunt bandicoots
Cyrtosperma cuspidispathum Alderw.; peduncle and spadix cooked in bamboo and fed to hunting dogs to promote aggression

PLANTS WITH OTHER CULTURAL APPLICATIONS

Arytera sp., aff. *litoralis* Blume,'*litoralis* complex'; resin is burned at night as a candle substitute
Calyptrocalyx hollrungii Becc.; leaves used for wrapping food, e.g. fresh meat caught in the bush

Cleistanthus sp., aff. ?*papuanus* (Laut.) Jabl.; said to be a particularly good firewood for cooking
Coix lachryma-jobi L.; fruits used to make necklaces
Cominsea cf. *minor* Valeton; leaves used as wrapping for sago
Curcuma cf. *australasica* Hooker f.; a source of yellow dye
Harpullia ramiflora Radlk.; bark is stripped and used as a fish poison
Helicia affinis Sleumer; ripe fruits provide a dark purple dye (e.g. for bilums)
Heliconia papuana W.J. Kress; leaves used for wrapping food, e.g. fresh meat caught in the bush
Hibiscus ellipticifolius Borss.; bark is peeled in strips as a sleeping mat
Leucosyke cf. *capitellata* (Poir.) Chew; leaves used as toothbrush
Lygodium circinnatum (Burm. f.) Swartz; stems used to make arm bands
Microcos sp. ?nov.; used as a fish poison, cf. *NGF 10231*
Morinda bracteata Roxb.; root bark is used for dye, cf. *NGF 10232*
Ocimum gratissimum L.; used for perfume
Phrynium cf. *macrocephalum* K. Schum.; leaves used as a wrap for garden vegetables and bush meat
Phrynium pedunculatum Warburg, or aff.; leaves used for wrapping sago
Pittosporum sinuatum Blume var. *sinuatum*; young leaves are mashed and rubbed on diving goggles to prevent fogging
Planchonia papuana Knuth; bark is used as fish poison, cf. *NGF 10250*
Psychotria amplithyrsa Valeton; mature fruits mixed with pig food to promote fattening
Psychotria membranifolia Bartl. ex DC.; leaves fed to pigs to promote fattening

ACKNOWLEDGMENTS

The Josephstaal expeditions were funded by the Nature Conservancy (TNC). Survey data cited in the present account are used by permission of that organization. My studies in PNG are otherwise maintained by a grant from the John D. and Catherine T. MacArthur Foundation, to BRIT Head of Floras John Pipoly III. The PNGFRI and Lae National Herbarium provided facilities support.

For the findings reported here I am indebted to the field assistance by Maya Gorrez (TNC), Ali Towati (BRIT parabotanist), and Joseph Wiakabu (LAE). Dr. Earl Saxon (TNC regional ecologist) was the senior investigator. Other participants whose efforts contributed to the expeditions' successes included Francis Bebe, Susan Brown, Edward Mayer, and Rene Weterings.

The Latin diagnoses were corrected or written by John Pipoly, and the illustrations of new taxa were prepared by N.H.S. Howcroft. John Pipoly also responded to my requests for information from the BRIT botanical library. Several identifications of difficult collections were successfully made by senior dendrologist Kipiro Damas (LAE). My ecology associate Hitofumi Abe of the Japan International Cooperation Agency, kindly provided the translation to Japanese script. Taxonomic specialists assisting with ongoing work on the specimens include P.I. Forster (Asclepiadaceae), N.H.S. Howcroft (Orchidaceae), K.L. Huynh *(Freycinetia)*, and P.F. Stevens (Clusiaceae and passim). Referees P.F. Stevens and J. Pipoly made numerous improvements to the draft with their effective criticism.

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